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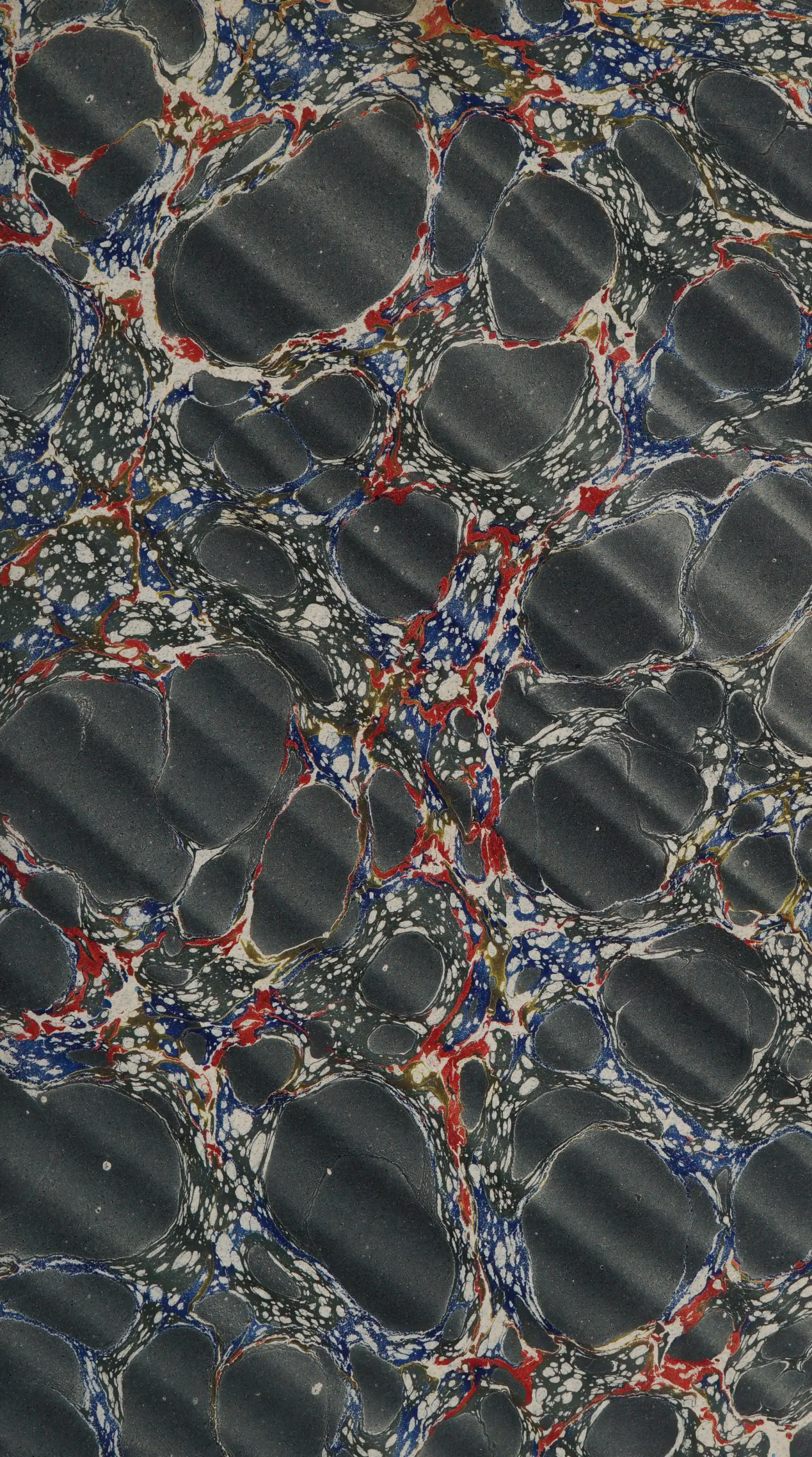

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PREFACE.

Being an Enquiry into the Nature of Human Knowledge, and the Means of attaining it; with a particular reference to the Science of Medicine, and the Author's objects and opportunities with regard to a proposed Medical Work.

THE most dangerous state incidental to the human mind is a calm acquiescence in the accuracy and extent of its own attainments. Knowledge is at once the origin of morals and the road to happiness; and precisely in proportion as we acquire it, we advance, though still at the most humble distance, towards the perfection of the Divine nature.

The knowledge of mechanics is already so extended as to afford us many fixed and invariable laws; and chemical facts are daily presenting themselves to us in numbers so great, as soon necessarily to produce some determinate principles. It must, therefore, at first sight afford cause for astonishment and regret that Medicine, the most important branch of natural

knowledge, which has for its object the prolongation of animal life, and the preservation of the bodily and mental powers, should have been left in the race so far behind its sister sciences. A little observation will, however, point out the great cause of this deficiency. The laws which govern the human frame might, doubtless, be experimentally ascertained with nearly as much precision as those of mechanics and chemistry, were it not for the intervention of another part of the compound which we would scrutinize. This is Mind, nurtured in prejudice and error, and therefore selfish; incommunicative and inaccurate, yet proudly expectant; at once capricious, irresolute, obstinate, and vindictive; suspicious; offended by reasoning, and averse to truth, yet credulous, and servilely grateful for being duped; equally intolerant of present inconvenience, and prone to present gratification. Examples of the difficulties arising from this source, which I have experienced during a professional practice of nearly forty years, crowd so forcibly and in such numbers on my memory, that to enumerate only a small part of them, would be to write the severest satire on the follies and vices of mankind.

Besides these great difficulties which occur with regard to the objects, or materials, of our examination, others arise out of the nature of the science itself. Medicine, taken in all its relations, comprehends a very extensive field. It is not sufficient that the physician should understand that which is already known of the empirical practice of his profession,

but his mind should be so stored, as to enable him in every case to apply the general laws of nature, and the particular laws of the animal economy, and thus continually to improve the science by new and important conclusions.

With this view, he who would aspire to a just character for professional eminence, ought to have an adequate knowledge of the properties of number and figure; of the laws of mechanics and hydraulics; of the general principles of botany and chemistry; and a still more minute acquaintance with the anatomy of man and other animals, and with metaphysics, or the properties of mind.

These acquisitions, necessary and multifarious as they are, can still be considered as only the introduction to the more immediate knowledge of his profession; in which he must, as far as possible, learn the structure and uses of the different parts of the animal machine, their various dependencies on each other, their movements and affections in a state of health, and the symptoms of deviation from that state. On these important subjects it would greatly improve the accuracy of his conceptions, were he to compare all the phenomena which occur in the human race with those of other animals, and even of the vegetable kingdom itself. He must also inform himself of the powers which disturb and restore the healthy functions, whether of the body or mind.

Who is sufficient for these things? Perfection is at a great distance from every mortal being. The experience of any individual is greatly defective, and

a large proportion of what we fancy we know must be taken on trust from others of every age and country. Hence arises the necessity of an acquaintance with the common language of ancient and modern science, Latin, and also with the most popular languages of modern Europe.

Above all, it is essentially requisite that the physician should learn the art of reasoning; or that facility of distinguishing or rightly classing ideas, which must necessarily flow from the habitual application of the mental faculties to various branches of science, and which he, who has been merely occupied with what is called the practice of the profession, can rarely hope to possess.

If the science of medicine be thus important and difficult, one might reasonably expect that it would, on its own account, be honoured among mankind, and its interests assiduously promoted. Above all, one would presume, that those who worthily profess it, would hold, among the orders of society, a rank precisely proportioned to the civilization of the country in which they lived.

What, then, will posterity conclude of the barbarism of a country, which, at the beginning of the nineteenth century, places medical graduates in the very lowest rank of privileged society? What will they think of men chosen from an important branch of the legislative body, who could openly assert the inexpediency of employing physicians to superintend the health of the brave defenders of their country? It requires no strong powers of

observation to see the tendency of such principles to discourage the scientific pursuit of medicine, and to debase it to the level of a mere mechanical art, capable of being practised by the meanest and most sordid of mankind.

There is, however, in every well regulated mind, an elasticity bounding against oppression, a sense of accomplished duty, a proud consciousness of having conferred unrequited benefits, which sustain it amidst all the degradations of external forms, and individual or national ingratitude, and which incite it, in spite of every obstacle, to persevere in one undeviating course to the end of its mortal career.

With such feelings, I proceed to the more immediate consideration of the subject which I propose to discuss in the following pages.

It had long been my intention to inquire into the objects of human knowledge; to examine what, in every department of science, it is within the scope of human capacity to attain, and what, therefore, it is the business and province of man to seek. To perform this work in a manner, if not more comprehensive, at least more accurate and simple, than had hitherto been done, appeared to me, not only a highly important, but a practicable task. As, however, it involved a minute inquiry into the faculties of mind, of which, and of its endowments, it was, in fact, a general and accurate arrangement, I perceived that the time which it would occupy was inconsistent with the incessant pursuits of a toilsome profession, and that, so far from my having any reasonable chance of

reaching the end of my proposed journey, my sun would probably set, while I was yet far distant on the road.

It is unnecessary for me to expatiate on the defects which too commonly attend the education of the schools, and other modes employed for the instruction of youth. With some few exceptions, we pass through those important periods in a laborious course of mechanical acquisitions, which are void of present interest, and deficient in future profit, because we seldom hear of their relations with the science of nature, or with the subsequent business or enjoyments of life. The consequence of this too often is, that when a young man, emancipated from the drudgery of instruction, is first left to the use of his own faculties, he is perplexed and bewildered with the multiplicity and diversity of ideas, which present themselves to his view either in the works of authors, or in the great field of nature which lies open before him.

Almost every young man so situated, after he has chosen a particular pursuit, in which he is anxious to proceed beyond the beaten track, has in vain asked himself this question, "What must I seek, in that "department of science, in which I am ambitious to "excel?" Thus a man often proceeds for many years, discovering at length, and as it were by chance, what it was that he ought to have before pursued, and vainly regretting the inestimable years, which he has suffered irrevocably to elapse unimproved.

It is, therefore, of the utmost moment in the search

after truth, that every human being should at his onset endeavour to acquire as clear a conception as possible of the road which he ought to travel, and the intermediate objects which he ought to attain.

The aim of the inquiry to which I have before alluded, would have been to have supplied this deficiency, and to have shewn, by apposite examples, that in every branch of science, whether moral or physical, whether respecting the powers and affections of mind or of matter, the whole of which the human mind is capable, is to receive, collect, and recal phenomena, and to ascertain their relations in point of quality and order. This inquiry would have extended itself to the principle, that all our notions of cause and effect are derived solely from an experience of the invariable and inconvertible order of like phenomena.

By the term Phenomenon, I mean whatever the mind perceives, whether it be a sensation, or its fainter renewal in form of what is called an Idea.

By the Quality of a phenomenon, I mean that by which it is distinguishable from other phenomena; as is readily seen when we compare a colour with a sound, one shade of colour with another, a strong sound with a weak one, &c.

By the Order of phenomena, I mean their relation in place or time; and by Succession, their order in time only.

All perceptions are evidently of two kinds; simple, as colour, taste, smell, weight, heat, cold, &c.; or complex, when two or more are united, or seem to cohere in the same object. Thus the idea of gold is

complex; being made up of certain simple ideas of weight, colour, &c.

It may be doubted whether in all these cases of cohesion of simple sensations so as to form complex ones, the mind is capable of contemplating at once any two of the component sensations. Thus when we look at an apple, it is not to me evident that we can at the same time contemplate the colour and the form; and it appears more probable that these qualities are perceived, not at once, but in rapid succession; and if this be the case with regard to the objects of one sense, it is more certainly true with regard to those which require to be contemplated by two senses, as of sight and feeling, in the example of gold above mentioned.

This mode of judgment respecting complex objects by the successive entertainment of the simple sensations which compose them, I mention only cursorily in this place; but it is probable that hereafter I may have occasion to consider it more largely, and to draw from it some important inferences.

Simple sensations or phenomena are for the most part arranged together by mankind according as they affect one or another sense. Thus some are perceived through the ear; and these are expressed by the visible or audible sign or name Sounds. In the same manner those by the mouth are called Tastes, those by the nose Smells. Of those which affect the sight, there are two divisions, Colour and Form. Under the sense of touch, phenomena of many qualities are comprehended.

Complex objects or ideas, in which two or more

simple phenomena are united into a congeries, and which comprehend affections of one or more senses, are also arranged conformably to their qualities, and designated by appropriate names.

In this way we proceed from particulars to generals; beginning with what are called Individuals, and advancing, according to the number of objects comprehended under the several heads, to Varieties, Species, Genera, Orders, Classes, and Kingdoms. Thus, for example, the Animal Kingdom is said to contain several Classes, of which the Mammalia are those which nourish their young at the breast. Under these there are various Orders, of which one is that of Ruminant animals, or those which chew the cud. Of these, one Genus is the Ox or Cow; of which the Bison, the Buffalo, our domesticated Cow, &c. are Species. Of the Cow or Ox it is well known that there are many Varieties, vulgarly called Breeds; and each of these varieties consists of many Individuals. Now it is evident that, in this example, each Individual so placed, however it differs from all other individuals, must exhibit in itself all the phenomena which are designated as characterizing the Variety, the Variety those of the Species, and so on up to the great general and comprehensive mass or heap called Animal Kingdom, or, in one word, Animal.

The process of mind just exemplified is applicable to all phenomena, whether moral or physical.

An idea which includes all the phenomena in any one object or set of objects, by which, as to quality

or order, they are distinguishable from all others, is called an Abstract idea. Thus the idea expressed by the word Animal is an abstract one, signifying all the characteristic marks of agreement of every individual arranged under that comprehensive head.

This statement readily explains that artificial process of logic called Syllogism; and which is nothing more than an assertion, in appropriate terms, that the known qualities of some object, or set of objects, are such as to comprehend it under, or exclude it from, some one of the more general or higher steps in an ascending series, which is known to have the same qualities. Thus if we say,

All creatures which ruminate are Animals;
But an Ox is a creature which ruminates; therefore
An Ox is an Animal;

It is evident that this is merely an arrangement of phenomena in the Genus Ox, already known to exist in the kingdom, Animal.

So in morals;

All vice is displeasing to God.
But want of charity is a vice; therefore
Want of charity is displeasing to God.

Which is nothing more than a general assertion, that God is displeased with all vices, among which want of charity is one.

Hence we understand why the first of these propositions is called the Major, that is, the greater or more comprehensive; and the second the Minor, that is, the smaller or less comprehensive; why, also, the minor is said to be included in the major; and

why, if the major and minor be true, the conclusion must necessarily be true also.

Another modification of Syllogism is the assertion of equality or inequality, similarity or dissimilarity. Thus,

A is equal to B, and
B is equal to C; therefore
A is equal to C.

This is, in fact, only arranging together, by known qualities, individuals in the same Variety; Varieties under the same Species; Species under the same Genus, &c.; that is, objects of each denomination under that which is immediately above it, just as the former modification is their arrangement under some denomination, which is still higher and more comprehensive.

Syllogism, therefore, gives us no information as to the qualities of phenomena or ideas; but is a mere classification of those, of which the qualities have been previously known.

Having been accustomed to perceive certain simple phenomena so united, or aggregated, as to form complex objects, we readily remember their quality; and connecting them with a name, are capable of specifying the several phenomena which it is intended to express. These names are well known to be altogether arbitrary, and therefore very different in different languages. On what principles a philosophical relation might be established between names and things, it is not to our present purpose to inquire; but it cannot be too often or too strongly

urged, how necessary it is to knowledge and the well-being of mankind, that no name should be used, without attaching to it some determinate idea, all the component parts of which, if it be complex, we clearly and distinctly conceive.

The peculiar union of these simple perceptions into complex ones is often so constant, that from habit we come to associate them together, and, on seeing one or more, conclude the existence of the rest. This, which is the simplest kind of reasoning, is often called Inference ; a word, the meaning of which is clearly enough expressed by the derivation. *Infero*, I bring in. That is, from an observation of certain simple phenomena, I bring in one or more, which I do not now perceive, but which I have been accustomed to observe connected with them. Thus, if I see an object of a certain colour, form, softness, and smell, I bring in its taste, and infer that it is a peach, though I have not applied it to my tongue and palate. The same kind of reasoning, which, in this instance, respects the qualities of the individual object, is applicable to its classification under the different heads in the ascending series, before described.

It is this inference of particular unseen phenomena from the constant conjunction of others that are perceived, which constitutes the species of reasoning called Induction, and which, by the derivation of the word, *Induco*, implies a mental leading in of unobserved phenomena, so as, in this particular instance, to constitute a known complex object.

The difference, therefore, between Induction and Syllogism is, that the former infers the existence of one or more absent phenomena from an actual observation of others, with which, in past experience, they have been always connected; and the latter classes those, all of which are actually perceived.

The simple parts of complex ideas or objects are often so numerous, complicated, and obscure, as to be difficultly distinguishable. In order more accurately to comprehend them, we are often obliged to separate them from each other, so as to examine each, either by itself, or in some new and less complicated union. This is what is called Analysis, or Resolution, and is essential to an accurate acquaintance not only with the science of chemistry and other physics, but also with the faculties and functions of mind. When phenomena or bodies are thus separated and simplified, their re-union with each other, or their union with others so as to form known or unknown combinations, is called Synthesis.

It will be readily allowed, that the certainty of Inference, or Induction, must be proportioned to the clearness and number of the simple phenomena in any complex object or congeries, and their precise resemblance to those which constitute the object to which we refer.

Where phenomena are not exactly, but only nearly, alike, our reasoning as to the existence of those which do not appear, and therefore as to the whole congeries, is said to be by Analogy. The nearer,

therefore, the resemblance, the more probable is the inference or conclusion.

I shall hereafter have occasion to shew that these processes of Inference, Induction, Analysis, Synthesis, and Analogy, are applicable to the uniform succession of phenomena, as well as to their congeries.

The order in point of time, or the succession, in which the phenomena constituting complex objects or ideas occur to the mind is not uniform, or essential, but as various as the number of simple phenomena will admit. Thus, in a peach we may first perceive any one of the phenomena of taste, smell, colour, or touch, and proceeding indiscriminately to any other, may associate the idea, or infer the existence of any one or all of the rest.

Besides this species of order in phenomena, which constitutes complex objects or ideas, and admits of no restriction in point of succession, there is another species, which applies equally to the most simple and the most complex phenomena, and which respects their succession only. It is this which, under certain circumstances, constitutes what may be called the Mechanism of Cause and Effect, to which I have in a few words already adverted. As an intimate acquaintance with this subject is, both in speculation and practice, the most important branch of human science, I may be permitted to enter at some length into its investigation. And here,

I. When one phenomenon immediately and invariably follows another, we infer that the latter is the cause of the former.

That this experience is the only mode in which we come at the notion of causation is evident; because

1st. The degree of confidence, which we feel as to this relation, is precisely proportioned to the frequency of similar cases which we have witnessed.

2dly. When we err in this respect, which is extremely common, our error usually arises from defect of experience; or, in other words, from the want of repetition of similar cases.

3dly. We form no such notion at all, previously to experience of this succession.

It is scarcely necessary to point out examples of the two first of these proofs; but the third is sufficiently exemplified by the child which puts its finger into the flame of a candle from utter ignorance that, by so doing, it shall suffer the pain of being burnt.

In this case, indeed, the phenomena are so few and apparent, that they require no very frequent repetition, in order to convince the observer of that invariable relation, which is denominated cause and effect.

But even in examples almost equally simple, the rage of conclusion is so strong, as, among the vulgar and uneducated, at once to supersede the necessity of adequate experience, and to demonstrate the source from which we derive all our notions on this subject. Of this error of inference, arising from the mere casual succession of phenomena, the science of medicine itself furnishes us numerous examples. Without it, quackery would indeed scarcely exist; and a grain or two of bread, moulded into the form of a pill, would never have been accused of inflicting on

the morbidly susceptible patient unequalled tortures.

II. The immediate succession, or, as Mr. Hume expresses it, the *contiguity* of phenomena, which is mentioned under the last head, does not indeed always occur. On the contrary, the ultimate phenomenon or effect may be at a considerable distance from its supposed cause.

In such instances, however, we perceive an approximation between the first and ultimate links by intermediate ones, which are sufficiently near to enable us to ascertain their invariable succession. Thus in the chain of phenomena from A to D, though D be distant from A, yet as it uniformly and closely follows C; C, B; and B, A; we have no hesitation in concluding A to be the cause of D. Thus in medicine, a man having had variolous matter applied by a lancet to his skin, has a fever and a crop of suppurating pustules, which, however, do not appear for many days after the application of the matter, and which are followed by death. Now would any one, previously to experience, that is, the repeated observation of such a train of similar phenomena, have suspected that so trifling a cause would have been succeeded by pustules, and all the other dire consequences of this foul pestilence? Surely not. But after he had observed the phenomena from the first contact of the matter, through fever, local redness, and eruption, to death, all proceeding in invariable succession, he would then be satisfied as to the relation of cause and effect which took place between the first and last of these appearances.

That phenomenon of which we observe, that, wherever it exists, another immediately follows, is called the Proximate Cause; and all the preceding ones Remote Causes. Thus in the chain A, B, C, D, E, D is the proximate cause of E, and all the former are Remote. In the same manner, C is the proximate cause of D; and so of the rest.

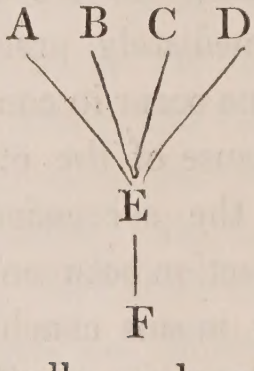
III. In order to establish the relation of cause and effect, the succession of phenomena, or in other words the series of links when all are discovered, must be not only constant, but invariable or inconvertible. Thus although day constantly and immediately precedes night, we do not infer that it is the cause of night, because we see that night also as uniformly and immediately precedes day. Since then these phenomena occur in convertible succession, one cannot be the cause of the other.

IV. In tracing the succession of links, which constitutes the connection between effects and causes, we must not by any means conclude that we see all the intermediate phenomena. Thus between any two of the links which form the chain from A to D, there may be many phenomena acting as causes, precisely as much as those which we actually perceive. These, which are however often perceived by chance, it is the business of the philosopher to seek, and, when found, to arrange in their right order. In the mean while, the inference from A to D may be just, and the series, so far as it goes, may be perfectly accurate.

V. Various causes may produce the same effect.

Thus if I want to raise a stone, I can do it by the mere application of my hand and arm, by a lever, a wedge, a screw, a pulley, by the conversion of water into steam or ice, or the extrication of elastic air from the deflagration of gunpowder. In all these cases, though the mode is different, the effect is the same ; and on this as on other occasions, our conclusion, with regard to the connection in each instance, is derived from an accurate observation of the invariable succession of the respective phenomena.

VI. Various causes may produce the same effect, which may itself be the common cause of an effect immediately succeeding. Thus in the following arrangement,



A B C D may severally produce the effect E, which may be the cause of F.

This is the true mechanism of remote and proximate causes as hinted at in II.; A, B, C, D, being in this case remote causes of F, and E its proximate cause. It also explains the fact mentioned, (V.) where all the causes cited are remote causes, producing one common effect, which is Impulse, and this the proximate cause of the rise of the stone.

It is obvious that the chain of effects does not in all cases, as in the present example, necessarily end

at F. The phenomenon or effect in question may be one or more steps lower, as for example G; in which case E will be a remote and not a proximate cause, and may still be itself an effect common to either of the several causes A, B, C, D.

VII. Were all phenomena, objects, or ideas, simple and uncombined, it would not be difficult to discover their series, so as throughout the whole of Nature to ascertain the relation of cause and effect. This, however, as I have already remarked, is far from being the case. On the contrary, there is reason to believe that our senses are incapable of perceiving, and therefore of distinguishing, any single element. The most simple bodies are presented to us in combination; and it is this which induces the Chemist continually to analyze substances, which he can effect in no other way than by exhibiting them in new combinations. Even binary compounds themselves have probably never been seen; for precisely in proportion to the advance of the science, we discover that bodies, which were supposed to be compounded of two parts, or principles, are made up of a greater number. Hence it is, that, hitherto, no such arrangement of the qualities and order of chemical phenomena has been made, as to constitute clear and undeniable laws.

But without going into the minutiæ of chemistry, it would be easy to shew how, on the various occasions of common life, we employ a similar analysis for the establishment of our notions of cause and effect, and the consequent direction of our conduct.

One might illustrate this principle by shewing, that if an adult savage, who had never before known the qualities of fire, were on a sudden to see, and burn his hand by touching, a red-hot cannon ball, he would, by the recollection of other objects, and by the changes gradually observable in the ball itself, separate all the sensible qualities of the ball, namely, colour, magnitude, figure, hardness, and weight; and abstracting the injury to his hand from each of them, would refer it to some other cause producing a peculiar sensation; to which cause he might, by chance, give the name of Heat.

VIII. Our acquiescence in the relation of cause and effect in any series of phenomena, as from A to D, will be the more perfect if it can be shewn, that any one link in the chain, or the order of various links, has never been known to exist, except in that series of which A is the commencement. Thus the variolous pustules have never been known to arise subsequently to any other phenomenon than the application of variolous matter, in some form, to the animal body.

In this case then of A in inconvertible order preceding D, and of D being never known to exist without A, we have all the evidence of the relation of cause and effect, which can possibly exist.

IX. When we have the evidence stated in the last section, the want of proximity between A and D, or the want of any one or more of the connecting links, is no just objection to the conclusion that they stand in the relation of cause and effect. Thus a

man is bitten by a mad dog. The wounded part heals, and not a single symptom of indisposition, either in the constitution or part affected, occurs for several weeks, or perhaps months. At length, however, arises a symptom, or a series of symptoms, which in its quality or order differs from all others, except those which have followed the bites of animals so diseased. We, therefore, justly conclude a malady thus circumstanced to be caused by the bite of a rabid animal.

Let us, on the other hand, examine by this test some of those practical conclusions, by which mankind perplex themselves, and impair the happiness of society. A pregnant woman is frightened, or longs for some article of food, which perhaps she is unable to obtain. A child is born with a mark or deformity, which is without hesitation attributed to the affection of the mother's mind. Would such a conclusion ever be current, if mankind in general, knowing how to judge of the relation of cause and effect, knew that millions of women have, during pregnancy, longed or been frightened, whose children are free from every blemish; and that hundreds of children are born with marks, whose mothers have never either been frightened or longed?

So also in a very recent and popular example. A child is vaccinated, recovers from every effect of the operation, and remains for weeks, months, or even years, free from all disease. At length it has an eruption on the skin, or becomes scrofulous; and these effects are attributed to vaccination. What,

however, is the state of facts? No new form of eruption or scrofula has appeared since the introduction of vaccination. More human beings had both eruptions and scrofula before the introduction of vaccination, than since; and lastly, millions of human beings have been vaccinated, who have since had neither scrofula nor eruptions. Are the opposers of vaccination acquainted with these facts? If they are not, they have not the materials of judging. If they are, they have not the capacity of judging.

In these examples all the conditions of proof with regard to the relation of cause and effect are absolutely wanting; for not only D rarely follows A, but occurs in millions of cases where A does not exist; nay, in the case of vaccination, more rarely than it did before A began to exist.

Such is the precipitation with which phenomena are placed in the relation of cause and effect, on account of distant and fortuitous succession, by persons unaccustomed to exercise the rational faculty.

X. In order to produce a given effect, the quality of the cause as to intensity or degree must be precisely ascertained. Thus a stone of a ton weight may be raised by a lever. It is, however, evident that every assignable degree of force will not be adequate to this effect; but that the degree must be proportionable to the end proposed.

XI. From the circumstance mentioned under the preceding head it follows, that a coincidence of causes may be often necessary in order to produce a required effect.

Both this, and the foregoing head, will derive further illustration from that which immediately follows.

XII. Causes which at first view appear the same, do not always produce the same effect.

This may arise from various circumstances.

1st, From hasty and cursory observation ;

2dly, From the want of a light sufficiently strong to enable us accurately to view the object ;

3dly, From a defect of percipient powers ;

4thly, From prejudice, or the substitution of inference for actual observation ;

5thly, From the complexity of objects, as specified in VII, where the uncertainty arising from this source is sufficiently explained.

But even in cases of a much less complicated kind than those referred to under the last head, we are liable to continual deception and error from the causes specified under the four preceding heads, which may be illustrated by a familiar example.

In the clear day, and with the unimpaired use of all my senses, I hold in my hand a guinea, which, after careful examination, I put into a nice balance, and find that it exactly equipoizes 118 grains.

A few hours afterwards, desirous to repeat the experiment, I have recourse to the weights and scales, and being about to take the guinea from a drawer am hastily called away. I however take out the guinea, and giving it a cursory glance, place it in the scale ; when, to my great surprise, I find that it is outweighed by the 118 grains. I have now no time for inquiry, and the whole apparatus is laid aside for

farther examination. On my return, I perceive that in my haste I had employed a different guinea from that which had before been weighed.

On two subsequent occasions, once after sunset, and again while labouring under some disorder in my eyes, I make a similar experiment; and being each time disappointed as to the result, discover afterwards that I had chosen a wrong guinea.

Having now placed it in a drawer by itself, I some days afterwards, without examination, take it out, and trying it, again find it not to equipoize the weights. Here, however, I perceive myself to have been under the influence of prejudice, that is, as the name imports, of judgment prior to actual observation; for on inspecting the piece of coin, I discover by indisputable marks, that it is not the same as that which I had put aside, and therefore it must by some unknown accident have been changed.

In these examples, then, the guinea no longer produced the effect of counterbalancing the 118 grains.

It is however obvious that, in all the cases, the difference of effect arose from a difference in the supposed cause or agent, although it appeared at first view to be the same, and, in each experiment, was designated by the same name.

It, indeed, is one of the insuperable imperfections in language itself, that, consistently with the convenience of common life, distinct appellations cannot be given to each individual idea or object; but each name must be an abstract term, including

all which so much resemble each other, that it serves alike to recal each, when necessary, to the mind, however they may in certain respects differ. But however this generalization of ideas by abstract terms may be adapted to the common purposes of social intercourse, it often produces great error and confusion in science, against which it is necessary most cautiously to guard.

Besides these errors depending on the difference of the guinea, which is the supposed cause or agent, it is easy to see how the same diversity of effect might arise from a want of identity or exact similarity in the weights, which are to be acted on.

Lastly; I make the experiment with the same scales, and precisely the same guinea and weights, and am again disappointed and puzzled by finding that the former will not suspend the latter. At length I discover that a piece of wax adhered to the scale containing the weights, and thus caused it to preponderate. In this case the series of phenomena was changed by the intervention of another cause, which did not at first appear; and which may serve as an example of the difficulty arising from the complexity already expatiated on in VII.

From all these considerations taken together, it appears, that in order to the certain production of an effect from a cause, all the phenomena, both as to quality and order, or, in common language, all the circumstances of the case, whether in the agent or patient, in that which is said to operate, or that which is operated upon, must be precisely ascertained.

Causes have been divided into two kinds, Efficient and Final.

Efficient causes are those phenomena which in the series precede those which are called effects, conformably to the rules above established. The term Efficient itself, according to the usual indiscrimination of language, implies an active power in the former to produce the latter. I say an active power; because the word power is used to signify not only a self-acting object or principle, but something which is wholly passive, or a mere capacity of suffering a change from the operation of an agent which is external to it. In the latter sense, according to the illustration of Locke, wax has the power of being melted. On this, as on other occasions, indeed, we find it difficult to conceive material objects to possess any real agency or self-moving principle, or any power of creating external phenomena; and therefore cannot avoid considering all these powers as the mere effects of the will of God, who might have modified and changed them as he pleased. When, therefore, I employ the terms Efficient and Power as applied to matter, I only mean to express the quality and order of perceptions or phenomena.

A Final cause is merely an effect, implying the end or tendency of any series of phenomena.

Thus the final cause of just punishment is the production of happiness; by which is meant, that the just design of inflicting pain on delinquents is the promotion of personal or public virtue, and therefore happiness. So the final cause of hunger

is the nourishment of the animal body; and the final cause why I employ the exercise of walking, is the maintenance of health.

In these and all other instances of final causes, there is an implication of some intelligence, making that which is called the final cause the end, view, purpose, or design of certain phenomena or actions. Thus, in the last example, my practice of walking arises from a design to preserve, by bodily exercise, that health which I have been accustomed to see result from the same practice under similar circumstances. So also in the example of hunger, it is implied that there was an intelligent mind, who made food necessary to the nourishment of the animal body, and hunger the inducement to eat.

To the head of Efficient causes belong the two divisions of Remote and Proximate causes already explained.

Remote causes have also been divided into

1st. Occasional or Exciting causes; and

2dly. Predisponent, or Predisposing.

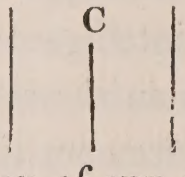
Of these the first are obviously those, to the operation of which the given effect is owing. The second requires some farther examination.

For this purpose let us suppose a pair of scales to be so constructed as to require, in order to turn them, a weight of ten grains; and let nine grains be put into the scale. They will produce no sensible effect. It is, notwithstanding, certain that they predispose the scale to turn, for it will do so when a single grain is added; whereas before the nine grains were

employed, ten were required in order to produce the same effect.

Here, then, is a tendency to be acted on by an Exciting cause; which tendency is called Predisposition, and is often imperceptible till its existence is proved by the visible slightness of power in the exciting cause, relatively to what is required in other cases apparently similar.

Dr. Brown, I think, appositely illustrates the same principle in the animal economy by supposing health to consist in a latitude of fluctuation between two parallel lines A B In proportion then as



from the operation of any causes, whether original in our make and frame, or subsequently applied, our state deviates from the central line C towards either of the lines A, B, a slighter cause or impulse, than would otherwise be necessary, might propel us beyond the limits of health, and occasion us to pass within the boundary of disease. This state of approach, therefore, to either limit is called Predisposition, or the predisposing cause of disease.

This term, therefore, is applicable merely to a condition which exists in one or more parts of the body, and which is an approach towards a given and sensible effect. Thus if the proximate cause of hemiplegia be a diminution of the nervous energy of one side of the brain, of which the usual remote cause is the pressure of blood poured out from the

cerebral vessels, we may conceive how either from a previous diminution of energy in the brain itself, which is an approach to the proximate cause, or a preternatural laxity or fulness of the cerebral vessels, either of which is an approach towards the Remote cause, all existing in the body, certain exciting causes, in themselves otherwise insufficient, cooperating with these states, might produce the effect called hemiplegia.

On this and on other occasions it is however probable, that the chief agency of predisposition is on the remote causes existing in the body, rather than on the proximate ones; because the latter are seldom capable of being acted upon by those, which are external to the part or the constitution, except through the medium of the former. Of the truth of this principle many proofs will probably be given in the course of the following work.

The predisposition thus described is often transmitted from parents to their children, and is therefore called hereditary. From what has been said it however appears, that it does not constitute actual disease, but disposes persons to fall into disease from remote causes, which would have no sensible agency on others differently constituted.

Having seen a series of phenomena invariably occurring so as to constitute cause and effect, whenever we observe a part only of the same phenomena occurring in the same order, we conclude the existence of the other links, and therefore of the whole series. This is the process of Inference or Induction with regard to cause and effect, which was before explained

with regard to complex ideas or objects, and which forms the chief exercise of the faculty of reason in the pursuit of knowledge, and in the conduct of life.

In contemplating all those circumstances which constitute the happiness or misery of our fellow-creatures or ourselves, we naturally trace back the several preceding actions and events through their whole series, and comparing them with other trains, and with the revealed will of God, observe their fixed and immutable connection as causes and effects. Remarking also that the same series, which, in a great variety of instances, were to us future, are now past, we justly infer that the same causes will continue to produce the same effects; and are thus determined to pursue that conduct which leads to good, and to avoid that which leads to evil.

The road to this great knowledge is therefore the ascent from effects to causes, and that of practice the descent through causes to effects.

Hence we see how essential it is to true knowledge, and therefore to happiness, that we should obtain clear and decided notions of the invariable order of phenomena in the sensible world around us; and that both in speculation and practice we should be cautious of admitting any inference, which is founded on an observation of only a few phenomena.

It is a painful duty for me to remark, that there is no subject in life, in which more of false reasoning is admitted than in the science of Medicine. There is too frequent an assumption of principles, which are the offspring of prejudice arising from fashion or

hereditary authority, and which are wholly unconfirmed by general experience. Of this kind are,

1st. That bleeding is injurious in the gout.

2dly. That it would be fatal in typhus or dropsy.

3dly. That nervous headachs arise from the state of the stomach, and should therefore be treated by those remedies, which cure or relieve dyspepsia.

4thly. That all nervous affections spring from debility, and therefore are to be cured by full diet, tonics, and stimulants.

5thly. That the majority of diseases originate in a disordered state of the functions of the liver ; and many others.

These opinions would be of little consequence to mankind, were they merely speculative ; but, unfortunately, they lead either to the omission of means which would be salutary, or to practices, which are generally useless, and too often positively injurious. I shall hereafter have occasion to scrutinize them more minutely in their proper place ; and trust that I shall be able to prove that they are mere assumptions, not founded on observation, and contrary to direct experience.

Not only are these erroneous opinions received, without inquiry, as a sort of medical axioms, which it would be heresy to doubt, but various inferences from actual phenomena have been promulgated and pass current against the laws of sound reasoning.

Thus, it having been in a few particular cases observed that scrofula was accompanied with evident disorder of the alimentary canal, and that the

former ceased when the latter was removed, it has been inferred that the latter is the usual cause of the former.

Is it then true, in fact, that dyspepsia is a usual concomitant of the first beginnings of scrofula? It is not. I have seen a multitude of cases, in which all the functions of the alimentary canal were most perfectly performed, and yet the patient was scrofulous; and if the two maladies occasionally subsist together, it is just as reasonable to conclude that dyspepsia is produced by scrofula, as that scrofula is a symptom of dyspepsia.

Here then, at the outset, there is an assumption of this erroneous principle, that because scrofula is produced in some cases by dyspepsia, where dyspepsia actually exists, it is owing to dyspepsia in other cases, where dyspepsia does not exist.

In favour, however, of this supposed origin, it is farther stated, and considered as decisive, that scrofula is cured by remedies, which restore the functions of the digestive organs. It will readily be allowed that this reasoning will scarcely be admitted, where the functions of those organs are not disordered. But even under the coincidence which is stated, the conclusion is also illegitimate; for it does not necessarily follow that the restoration of the functions of the constitution succeeding that of a disordered part to which a remedy is applied, is the effect of the restoration of the functions of that part. I say it does not necessarily follow; because the remedy may have a tendency to act on the whole system, and the part

to which it is applied may merely happen to be the first which experiences its salutary influence. Thus a man shall have a violent inflammatory fever, with local inflammation shifting from joint to joint. He bathes the inflamed part with cold water; the inflammation subsides, but the fever continues, and an inflammation appears in another part. To this he applies a great number of leeches. The local inflammation disappears, and with it the fever. Here then a local remedy, having power to cure a constitutional malady, merely shews its first influence on the local disease.

These observations tend to shew the caution with which we should receive speculative principles leading to important practices, though sanctioned by fashion, and promulgated by persons who are justly of the greatest authority in the science. Of such persons I may remark with the illustrious Haller, "sed et ii "homines fuerunt: Natura sola non fallit."

In endeavouring to trace the relation between effects and their causes, it often happens that phenomena occurring in a certain known succession, are not precisely similar to those which have usually made a part of that succession. In this case we sometimes admit them as a probable ground of induction with regard to other links in the chain which are not seen. This is reasoning by Analogy, as to the connection of cause and effect. When instances of this kind are produced as proofs, the quality of the phenomena should be as nearly alike as possible. Hence it follows that phenomena or principles taken from the depart-

ments of mechanics or chemistry, can rarely be employed in explanation of the functions of animal life.

If in any chain of phenomena we perceive that the succession is similar to that of other chains made up of like phenomena, we are then said to be able to explain it.

We say, for example, that we can explain why in a healthy man the elbow is bent at will; because we know,

1st. That any sufficiently cohesive substance, which is capable of being shortened, having one end firmly attached to the bone of the humerus, and the other to those of the fore arm, must when actually shortened, if the joint be flexible, and there be no resisting power, bring those bones towards each other, and therefore bend the elbow.

2dly. That there is a certain substance, sufficiently cohesive, which is so attached, and which is called the Biceps muscle.

3dly. That in healthy men, muscles are capable of shortening themselves, in consequence of that process which is called Will; and

4thly. That this muscle, called Biceps, does so shorten itself, when that process takes place.

Thus by an observation of the whole series of phenomena in this example, and of their similarity in quality and order to those of other series, we are said to be able to explain the voluntary flexion of the elbow.

Through this examination of the nature of cause and effect, I have often employed the words invariable succession, and the whole tendency of the

discussion has been to shew that this succession of phenomena is, comparatively speaking, constant and uniform. We may, indeed, contend that wherever it exists it is necessary ; because every thing is necessary which the Almighty wills ; although we can readily conceive that the order of phenomena constituting this connection might be changed, nay believe that for wise purposes it has been changed, by that Being who first established it, and to whom nothing is impossible that does not imply a contradiction. Each effect is alike connected with its cause, by the intervention of the Divine Will.

After having thus endeavoured to ascertain the nature of human knowledge, and the means by which it is acquired, it may be necessary for me to attempt the removal of certain difficulties which metaphysical writers, from the earliest ages of science to the present time, have thrown in the way of systems so constructed as that which is contained in the preceding pages. These difficulties chiefly arise from the attempt to introduce other principles as agents and means in the great work of mental instruction. Of these principles the chief are Intuition, Common Sense, and Innate Ideas ; all of which it may be expedient here shortly to investigate.

If sensations differ from each other in quality, it is essential that the mind should perceive that difference ; otherwise all sensations would be the same sensation. The same principle must apply to the difference between a sensation and an idea, and between ideas themselves. This difference is clearly

perceived at the very instant that the several Sensations or Ideas occur.

That which is true respecting the difference, must also be true with regard to the agreement, of sensations and ideas.

It is the same with regard to the order of perceptions, as to place and time; of which the mind, if it has the power of remembering those which are past, so as to compare the idea with the present sensation, immediately also perceives the agreement or difference. Were this not the case, there could be no complex ideas, and existence itself would be but a single point.

This faculty, in its different modifications, seems to me the whole of that capacity of intuition, with which human beings are endowed.

It is evident, therefore, that all the notions or conclusions, afforded by human intuition, are dependent on experience, which results from sensations and ideas, and alone furnishes the materials on which the exercise of intuition is founded.

In these mental affections and powers, a general resemblance originally subsists among all healthy individuals of mankind; so that, with some difference of native acuteness of perception, colours, sounds, tastes, &c., and the order of simple ideas, probably appear alike to all human beings. This coincidence, together with that of tastes, affections, and faculties, growing out of the original sensations, is the great bond of social union among mankind.

The faculty of discovering at once, or by intuition, the agreement and disagreement of Perceptions as

to quality and order, is chiefly that which certain metaphysicians have chosen to designate by the appellation of Common Sense; as if, under a new name, they had announced a principle distinguished by new or previously unknown powers. Thus it is that persons deceive themselves, by what Mr. Locke emphatically calls the "cheat of words."

This, also, is the chief origin of Innate Ideas, so long prevalent in the schools. Thus Allemand, in his first letter to Gibbon, criticizing Locke, whom he does not understand, says: "il est certain que le plus "petit enfant suppose la verité de cette proposition (le "tout est plus grand que chacune de ses parties) "toutes les fois que, non content d'une moitié de "pomme, il veut la pomme toute entière." And again, in his second letter: "des lors, demander s'il "y a des idées innées, c'est demander s'il y a "certaines vérités si évidentes et si communes, que "tout esprit non stupide puisse naturellement, sans "culture et sans maitre, sans discussion, sans raison-"nement, les reconnôitre d'un coup d'œil, et souvent "même sans s'appercevoir qu'on jette ce coup d'œil. "L'affirmative me paroit incontestable." Of the cogency of this reasoning he is so satisfied, that he concludes with observing, "selon moi, la question "est vuidée par la."

Surely no one in his senses is so stupid as not to perceive that white is not black; and every child of a certain age, who sees half an apple, is capable of discerning at the first glance that it is less than the whole one. But, in both cases, the objects must be

severally contemplated, or become subjects of sensation, before this same innate idea can take place; and when they have been so contemplated, the intuitive faculty demonstrates their difference. That this decision is formed without education, discussion, or reasoning, is sufficiently apparent; for, in reality, the perception of the distinction is the basis of those three processes themselves: and no rational person would expect a principle to be produced by that, to the production of which the principle itself is prior and essential. How, also, the difference between the half of an apple and the whole is to be discovered by a coup d'œil, without the exercise of that very sense which the metaphor expresses, I leave to be determined by persons whose powers of perception are more acute than mine.

Although, therefore, the faculty is innate, like those of sensation, reflection, &c., its exercise requires perceptions, that is sensations, or ideas, or both, as the materials of its operation.

In this manner the learned Professor, in common with many other metaphysical writers, confounds the Faculty itself with the result of its exercise.

It may, perhaps, farther be objected, that mechanical art is a part of human knowledge, not comprehended under the classification which I have above attempted.

Art, taken in this sense, consists merely in the employment of muscular movements, in order to obtain certain ends. Now, as in all cases, except that of instinct, the application of those movements to these ends originates in consciousness, which is an

affection of mind; and as the necessary movements come gradually to follow that consciousness, without our even knowing by what instruments we produce them; it appears, that art itself, which is their result, should be considered as an involuntary effect of science, according to the principles already laid down.

The mode of this connection, as resulting from the phenomena, will naturally demand farther discussion, when the subject of Muscular Motion comes under particular consideration.

The invariable relation of phenomena, as to quality and order, founded on the will of the Supreme Being, constitutes what are called Laws, either of dead matter comprehended under the terms Mechanical and Chemical, or those of Animal and Vegetable Life.

It is indeed certain that living beings themselves are subject to be acted on by those causes, which constitute the laws of mechanics and chemistry. Thus an animal falls from an high place by the power of attraction, and becomes cold when exposed to a low degree of temperature: and if he is endowed with powers capable, in these and various other instances, of counteracting the mechanical and chemical forces which tend to his injury, it is by means of specific instruments appropriated to those ends, and which, elevating him above dead matter, are classed under the functions of vitality. Thus a bird preserves himself from falling by an apparatus, acted on by muscles influenced by certain affections of the brain; and the operation of external cold is resisted by a process partly of a vital nature, by which heat is absorbed

from external substances, in proportion to that which is lost by the vital actions themselves, and by the proximity of other substances which are sensibly cold. Diminish the principle of life, and the bird falls and becomes cold. Extinguish it, and he flies or becomes warm no more.

To ascertain, therefore, the quality of the phenomena which constitute life and health, and to arrange them according to their just order, so as to shew their classification in functions, and their dependence on each other and on external phenomena, as cause and effect; these objects which are called Anatomy and Physiology, must necessarily be the first elements of that science, of which I profess to treat.

Without this knowledge, it must, indeed, be impossible to understand the second branch of the science, or the Pathology; which exhibits the phenomena of deviation from the state of health, together with that order of them within, and connection with those without, which constitute the relation of cause and effect.

Of the third and remaining branch of medical science, or Therapeutics, the just object is not merely, as its name imports, to heal diseases, but to prevent them, and to alleviate those which it cannot cure.

The intimate connection of this branch of medicine with the two former will appear, when we consider how much both the production of disease and the maintenance and restoration of health are influenced by those powers, which are arranged under the heads of Regimen and Medicine. As no one, therefore, can either rationally attempt to apply remedies, till

he is conversant with the nature and order of the phenomena which constitute disease, or understand these, till he is acquainted with those which constitute health; so therapeutics must necessarily include both those sciences, as they respect the influence of all those causes, whether external or internal, which are capable of being applied or regulated by the powers and faculties of Man.

It would be out of place were I here to enumerate all the objects which are comprehended under these branches of the science of medicine. In the physiology, for example, I am at present concerned only to shew, that each function is nothing more than an arrangement of certain phenomena, which have a peculiar relation to each other, and concur to a given effect. Thus the function of respiration is made up of the phenomena of the motion of muscles raising the ribs and depressing the diaphragm; of the increase of cavity in the cells of the lungs; of the ingress of atmospherical air into that cavity; of a change produced in the qualities of the blood during its passage through the lungs; of the relaxation of the diaphragm and levators of the ribs; after which the diaphragm ascends and the ribs fall, and a certain quantity of air is exhaled, deprived of part of its ingredients, and contaminated with others which it did not before possess. The same process is for an indefinite time repeated, and thus animal life is lengthened and maintained.

From this general description it is evident that the function of respiration implies merely a set of phe-

nomena following each other in a certain succession; and that when we know all the phenomena of the process, together with the order in which they occur, we understand concerning it every thing, so far as that chain or series of facts extends, which the nature of human understanding will permit. The same is true of all the other affections, powers, or functions of animal life.

When it is asserted that this is true, so far as that "chain of facts extends," the expression may require some explanation. Let us then suppose, with regard to the function of respiration itself, that the lungs, instead of receiving atmospherical air, inhale carbonic gas. Here, all the consequences subsequent to inspiration in the former process are precluded, and the animal dies.

In this case, however, we find no diversity as to our mode of information. One new fact or object is substituted, and a new set of facts follows. These are, however, still only phenomena, occurring in a certain succession, and affording an example of a process properly arranged under the head of the Pathology.

So in the treatment of diseases, or Therapeutics; a person in a fever takes an emetic, vomits, and is almost immediately restored to health. In this case, there exist a set of phenomena, of such a quality and succession as constitute fever. A certain medicine is taken into the stomach. Vomiting follows; and the phenomena constituting fever give place to those which constitute health.

On this subject it is unnecessary to expatiate ; the illustrations already given are sufficient to shew, that, in every branch of medicine, the whole which we can acquire is a knowledge of facts or phenomena, arranged according to the order and succession in which they occur in nature; or, in common language, their relations to each other in quality and place, and their connection as cause and effect.

The peculiar modes in which inquiries respecting each of the three branches of medical science may be most profitably made, will naturally occur to our consideration, when those branches severally become the subjects of discussion.

The remark cannot however be easily omitted in this place, that in consequence of insufficient attention to the nature of human knowledge, the great mass of medical writings does not afford that degree of instruction, which from its extent and magnitude we should have been previously led to expect. In the introductory parts of the science, the Anatomy and Physiology, much labour has indeed been successfully employed, numerous phenomena have been ascertained, and excellent arrangements have been made. But in the higher branches of medicine, the Pathology and Therapeutics, we are too apt to begin where the laws of science require that we should end. In order to gain reputation, we write previously to experience, which is the chief ground on which we ought to write at all. A due discrimination and arrangement of the facts furnished by others, so as to ascertain or more clearly illustrate doubtful prin-

ciples, is indeed a very useful and laudable task, the judicious performance of which, in the morning of life, gives a fair promise of a brilliant future day. It is not, however, until a more advanced period of life, when a multiplicity of cases has afforded an opportunity of frequently observing facts in various lights, and tracing them to their several relations, that we can reasonably hope to distinguish the true from the false, or to erect any portion of the edifice of science, which shall be solid, and incapable of being shaken.

With regard to the mode of establishing medical knowledge, certain authors have thought it best to relate merely the results of their own observations, without entering into any detail of the facts on which their conclusions are founded. This is a most unsatisfactory method, arising from defective views of the nature of science, and tending to mislead not only the reader, but even the author himself; for even the latter cannot compare all the circumstances of that mass of facts which is necessary in order to establish just inferences, without the opportunity of subsequently examining the several particulars as they shall have been noted down at the period of observation. In the mode thus proposed, what security is there that the inferences of the writer are not either imperfect or actually false; and why is the reader precluded from the means of forming his own judgment, and of correcting or perhaps refuting the conclusions of the author? This synthetical method of opinions, unconnected with the

facts from which they are deduced, can at best be considered only as hints for observation to others, and will hardly produce even this effect except on the authority of long and accredited experience in the narrator.

Little less derogatory to the interests of science is the practice pursued and recommended by other authors, of relating those particulars only of medical or pathological facts, which bear on the point which the author contemplates. This is in plain terms to announce our conceptions of the extent of our own knowledge, and to shew our ignorance. While we omit to particularize phenomena which we consider as irrelevant to our present purpose, we leave unrecorded that which, if it would not vitiate the conclusions which are the objects of our contracted conceptions, might, perhaps, to others suggest new and valuable associations, or establish important principles.

These two modes will admit of reasonable apology only when the author wants time for farther amplification, or where the cases are so common as to occur to daily medical observation.

To these two defects it is, however, greatly owing, that medical histories and discussions are so uninteresting, that those who begin the practice are so confounded by the unexpected complication of phenomena which occurs in nature, and that he who peruses these records with the hope of obtaining collateral instruction, usually suffers the mortification of disappointment. Facts accurately and copiously recorded would serve as a kind of dictionary, in which

every person would be able to search for that quality and connection of phenomena which would apply to his own particular wants.

It cannot, however, be denied, that in this respect the profession of medicine labours under peculiar disadvantages. The very multiplication of the opportunities of knowledge so harasses and fatigues by the incessant practice of the art, as often to afford little leisure or inclination to cultivate and extend the science. If to this rule there occur some few exceptions, they depend not on any superiority of original talents, but on early habits of mental application, on the force of motives, on the felicity of local situation, and on the capacity of the body to endure privation and labour without suffering that languor, which would impair the energy of the mind.

The business of Man is not merely to eat, to drink, to sleep, to enjoy sensual pleasures, and then to lay himself down and die. Exclusively of eternal concerns, every human being should have some one great and laudable end in life, which should constitute his chief motive to action, and to which, therefore, all his other occupations should be subservient. Habits of this kind having been long formed, whatever may be the nature of the object in view, or however difficult its attainment, the pursuit is no longer painful. On the contrary, the mind associates it with all other trains of thought, reluctantly wanders from it, and returns to it with delight as to its native home.

Feelings like these, which have long made my

professional pursuits my greatest pleasure, aided by the wish of emulating some great professional names, and by a strong desire that the world may be the better for me after I shall have left it for ever, have supported me under the privation of domestic and social gratifications, and under exertions incessantly pursued through sickness, sorrow, and pain.

Whatever judgment the reader may ultimately form of my doctrines, no part of the more recent pathological principles delivered in my various writings, will either be borrowed from others where I may happen to agree with them, and none will be promulgated in order to controvert them where I differ. As circumstances may suggest, I shall doubtless avail myself of medical books. In them looking not for opinions, but facts; if it may be possible to distinguish the true and the luminous from that which confounds by fiction, by defective or erroneous observation, or by the substitution of hypotheses for phenomena.

The facts or opinions which may be derived from others, I shall scrupulously attribute to their true source. The reader will thus have no difficulty in distinguishing that which is the result of my own investigation, from that which is common property. If similar observations or deductions are to be found in books which have not been consulted, I shall consider this as a happy coincidence, confirming the truth of my own principles.

The great Book of Nature, which is alike open to all, and is "incapable of deceiving," I have hourly

read, and I trust not wholly in vain. During the first twelve or fourteen years of my professional life, I recorded almost every case which occurred to me either in private practice, or in the chief conduct of an extensive Charity. When afterwards the multiplication of common examples seemed to me an unnecessary waste of inestimable time, which might be much more profitably employed, I contented myself with the more useful task of recording chiefly such cases, or, on a few occasions, such particular circumstances only of cases, as led to the establishment of principles. This I have generally done on the spot, or rarely deferred beyond the day of observation, always rejecting what, on repeated and varied inquiry, I have not been able fully to verify.

Whatever inferences from phenomena have suggested themselves to me, I have immediately noted down, and afterwards carefully examined on all sides and in every light. By this method, which I strenuously recommend to all persons engaged in scientific pursuits, whether physical or moral, I have often been able to ascertain the order of phenomena, and to catch new links, which have gone some way towards completing the whole chain of causes and effects.

To the anatomical investigation of man and other animals, whether in a sound or morbid state, I have paid a degree of laborious attention, which persons actually engaged in the practice of medicine have not always an opportunity of applying.* Wherever

* To the occasions of this kind which have occurred in private, have long been added those which have originated in my con-

dissections of diseased bodies were to be obtained, I have eagerly availed myself of them; and have often urged their expediency, so as on some occasions to give inexpiable offence. From this uncertainty of success it has often happened that dissections have been wanting, where a long registry of symptoms had been completed; and, on the contrary, through the caprice of mankind, dissections have not unfrequently been solicited by friends, where in the very outset I had been hopeless of obtaining that important information, and had therefore neglected to write the history and progress of the disease.

Under these circumstances, I have been able to record a considerable number of dissections, together with nearly seven hundred illustrative cases, which chiefly serve as the basis of my intended work.

I propose to begin with a description of so much of the anatomical structure of Man and other Animals, as may explain the mechanism of the parts concerned in the more important functions. Then will follow, in due order and connection, an inquiry into the Physiology and Pathology, and lastly into the most effectual and best means of preventing, alleviating, and curing certain diseases.

nection with the General Hospital of this city, the Casualty or Surgical Hospital, and the Puerperal Charity, and in the opportunity which has always been afforded me by my deserving friend, Mr. G. Norman, of inspecting any interesting maladies which occur in the Poor-House of the populous parish of Walcot. Of comparative Anatomy my opportunities have arisen out of the possession of a great number of animals of various kinds, which have been the objects of my agricultural pursuits, and which are very advantageously situated for experimental inquiry.

In the various statements which will occur in the course of this investigation, nothing has been admitted but what on the most attentive examination has appeared to me to be true. I have also invented nothing; and rather left a description imperfect, than added from my imagination that which would have given it a finish and imposing rotundity. The form and features of Truth are indeed so beautiful, that they can neither be disfigured by partial concealment, nor receive any additional attraction from artificial colouring, or abundant ornament. For this reason I have avoided the embellishments of language, being convinced not only, with one of the greatest of Orators, that "istiusmodi res dicere ornatè velle, "puerile est; planè autem et perspicuè expedire "posse, docti et intelligentis viri;" but that this species of decoration is, in various ways, calculated to impose on the understanding, and to give to falshood the air of truth.

Far, however, am I from looking back on my professional life without considerable self-reproach and regret. How often have opportunities been neglected of ascertaining points essential to the discovery of inestimable truths, for which my records are now searched in vain! It may, perhaps, be some excuse, that this error is common to me with many others of mankind, who, at an early period of experimental investigation, are, as has been before remarked, ignorant of what is wanting to the advancement of the science which they profess.

Many of my cases, on the contrary, may appear

too circumstantial and minute. To this point I have already adverted. I write not for those who no longer want information, but for those who are less informed than myself, and would willingly profit by a retrospect of my own defects. I would not reject an appearance, because my narrow view does not perceive its value, either in quality or order; and it is better to fatigue by exuberance, than to starve by barrenness.

On the whole, I trust that the reader will find this work a faithful and copious record of facts, arranged so as to shew their connection in point of succession, or according to the relation of cause and effect.

Against opinions which are in many respects new, a multitude of objections will doubtless be started. To all candid and reasonable objectors, I may possibly reply. I shall readily listen to doubts, shall be grateful for information, and shall willingly acknowledge errors, where they shall be proved to exist. But I will not notice vague declamation, or dispute about the use of terms, which are either generally understood, or explained by my own definition. I refuse also to be tried by principles, which, though usually admitted, are shewn by this very work itself to be assumed, and not proved. I request every reader to judge of me, not by what he has been accustomed to infer, but by what he shall hereafter infer from actual observation by the bedside of his patients, after having perused this work, so as to understand it.

I am not so weak as to suppose that it will not be greatly defective. But it has already been shewn that

a system may be defective, and yet be true. Many links of the chain of phenomena may be wanting in order to form a complete series, and yet those which are actually noted may be accurately arranged. I have omitted none which I have observed; but that which has escaped my observation, may doubtless be seen by others. The great point will be, whether the quality and order of facts have been justly represented; and this point must be determined by experience alone. I cannot, however, be justly accused of precipitation, when it is considered that my conclusions have been derived from a most jealous experimental scrutiny of more than thirty years.

These remarks will, I trust, furnish a sufficient answer to those, also, who may reproach me with entertaining Systems or Theories; a reproach which would equally apply to every principle of morals, and every rule admitted by mankind for the conduct of life. He, who, on a journey arriving at a deep river, which he must cross, enters a boat, is a Theorist. He recollects that, according to the invariable order of like phenomena, if he walks into the river, he shall be wet, even though he should escape drowning; and to avoid both these evils, he chooses to pass over in the boat. In reality, those who employ as terms of obloquy the words System and Theory, are evidently ignorant of their true meaning. They confound them with hypothesis or mere supposition; whereas both System and Theory imply an arrangement of actual facts; which I have already shewn to be the most important part of human knowledge. What,

therefore, ought to be proved against me is, not that I am a Systematist or Theorist, which I readily admit, but that my systems or theories are imperfect or false.

Even error itself, whether in the physical or moral world, whether in speculation or practice, is not without its advantage in the investigation of truth. Some inconsistency with experience, or some diminution of happiness, eventually appears, and is recognized as having grown out of the error. Thus that series of phenomena, either as to quality or order, is no longer admitted, and one avenue to future falshood is permanently closed.

In the present state of medical knowledge, little of absolute certainty or demonstration can indeed be found. The science, however, is not merely speculative. It often demands the most prompt and vigorous exertion, the prize of which is ease or life. On many of those occasions, probability is all which the nature of the case will afford, and happy is he who is furnished with that which is highest and best.

It is scarcely necessary for me here to add, that this work is not intended as a complete history of diseases. It proposes to treat of none but those which have occurred to my own personal observation. These are, indeed, some of the most important, which can affect the human frame; and if, in the course of this inquiry, I can shew that many diseases, which, according to popular opinion, are of opposite natures, do in fact, at certain periods of their course, agree in one common circumstance or condition, it

will then follow that the theory of these diseases will be essentially simplified, and that a most important change should be made in the processes of cure.

This system with regard to that class of diseases, which are called Nervous, has been so long announced to the public, that nothing but the strong and almost irresistible force of prepossession could have hitherto generally retained the old and unsuccessful measures, which, before that period, were universally pursued in such maladies.

This error might, probably, have been long ago effaced, had it not been for the epicurean system of Brown; a system, which, from its simplicity, and its tendency to flatter the meanest propensities of mankind, has spread itself throughout the greatest part of what is called the civilized world. Its author was an ingenious man, whose resentments were gratified, and the means of his subsistence in a great measure furnished, by a reputation for novelty. But to acquire knowledge by actual observation, if he had the will, he certainly had not the opportunity. The greater part of what he knew of pathology was obtained only from report; and his systems, instead of being the result of actual observation in the chambers of the sick, were formed at his fire-side, if not amidst the bacchanalian orgies of his pupils. Those of his opinions which are true, are chiefly a commentary on the text of Cullen; and of that which is new, the greater part is fanciful and erroneous. From this remark I must except one valuable discovery, which is that of the just order of phenomena in the

process of what is vulgarly called catching cold, and of which, I think, he has the sole merit.

For what remains, or his Therapeutics, the great point at which all these discussions should aim, I appeal to the experience of every physician, who, by having made comparative trials of his processes, is alone able to appreciate them, whether any set of rules for the conduct of medicine, from the days of Hippocrates to the present time, has been more destructive of human health and morals, and therefore of human happiness, than the Therapeutic system of Brown.

In reality, it is not the pomp of language, the "whistling of a name," or the simplicity or ingenuity of a pathological theory, that can long give it currency with mankind. The sole point is, whether it is a just arrangement of actual phenomena, of which the operations of remedies form an indispensable part. If it does not include these operations, it is defective; if it is inconsistent with what is known of them, it is mischievous. By this test every medical work ought to be tried, and by it the present work must stand or fall.

Bath, October, 1811.

GENERAL ANATOMY AND PHYSIOLOGY.

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ANATOMICAL SYSTEMS.

IN describing the anatomical structure of the animal frame, authors have pursued different modes, suited to the several purposes which they have in view in their respective works. The far greater number, influenced probably by the consideration of the mere mechanical structure as it first occupies the attention in the carcase divested of life, have begun with describing the bones, which appear to be the basis of strength, and of permanent form and symmetry, to the softer coverings or contents. Thence they have proceeded to the muscles, of which they have noticed the origins and insertions into the various bones; and thus have gone on with detached, and, as it were, insulated descriptions of the circulating system, the brain and nerves, the organs of sense, the viscera, and other parts. Having thus ascertained the minutiæ of mechanical structure, they have supposed the animal endowed with life, and investi-

gated the various functions of vitality, with reference to the several parts of the whole machine.

This has been the mode chiefly pursued by Lecturers on Anatomy and Physiology, who would be indeed, in a great measure, disqualified from a better and more philosophical order, by the difficulty of obtaining fresh subjects for the requisite demonstrations.

In this method, however, the great relation between the structure and functions being originally kept out of view, not only is the anatomical part in the greatest degree dry and uninteresting, but, on account of this defect of association, it becomes infinitely more difficult of recollection, and is forgotten when we come to that stage of inquiry when alone it is useful, its application to the performance of the functions, whether in health or disease. Hence it follows, that when the functions themselves come under investigation much repetition is unavoidably required.

Far more lucid and satisfactory is the order observed by the great Haller; who, considering the mechanical structure of the various parts as subservient to the several functions of life, first describes those parts, then announces the phenomena, and lastly inquires into their relation as cause and effect. In this manner, having begun with the elements of the animal frame, he describes the structure of the parts concerned in the circulation, whether sanguineous or lymphatic; then recounts their several phenomena, whether actions or affections; and afterwards shews their relation and mutual dependence. His second subject is that of Respiration, its organs

and phenomena; together with its dependent processes, the Voice and Speech. Next in order is the description of the Brain, Spinal Marrow, Nerves, Organs of Sense, and Muscles; with the phenomena of Sensation, Intellectual Power, Motion, and Sleep. The author then proceeds to the parts concerned in the functions of Nutrition, and of Evacuation, in which are comprehended the greater number of the Abdominal Viscera. He next describes the structure of the Organs of Generation, and at great length investigates that important subject the first existence, nutrition, growth, structure, and birth of the new animal, whom lastly he conducts through its different stages of growth to maturity, decay, and death.

This work is a most stupendous production of human industry and science. When we consider the state of Physiology at the period when it was written, loaded with the false analogies of chemistry and mechanics, or trembling amidst the opposite, but fanciful, theories of Stahl, we cannot but be astonished that the author has so uniformly escaped the prevalent infection of vague hypothesis, and conducted his inquiries in a manner so conformable to the laws of true Philosophy, both in Anatomy and Physiology. We owe to him many important discoveries; and in the whole field of physiological science, which had at that time been opened by others, there is scarcely a path, however minute, into which he has not travelled. Nothing can exceed his sagacity in distinguishing between the true and the false, but his candour in acknowledging that which he does not see; and it

is not the least of his merits, that into what he does not fully or accurately explain, he affords the means and the disposition to inquire.

In this great work it may be considered as a defect, that it contains no account of the structure of the bones, or of their general relation to the soft parts; a defect which is considerably felt in the application of these first principles to Pathology and Therapeutics. I doubt, however, whether the same imputation does not equally attach to most succeeding writers on this subject.

The great discoveries which have been made in chemistry since the days of Haller, have opened to physiologists new views of their connection with some of the most important functions of organic and animal life. Various other experiments and observations on the economy of animals and vegetables have also been made, which have either been new, or led to the establishment or correction of former opinions.

Of these, as well as of the more recent anatomical discoveries, there is a very compendious, yet concise and accurate, view in the work of Soemmering de Corporis Humani Fabrica, in which the author treats the subject in the following method: 1. Osteology; 2. Syndesmology; 3. Myology; 4. The doctrine of the Brain, Spinal Marrow, and Nerves; 5. Angiology; 6. Splanchnology.

Although this work is excellent in its kind, and comprehends a very large proportion of what was previously known on the subjects on which it treats,

together with some discoveries, or ingenious surmises, of the author himself, it must be acknowledged that, in point of scientific arrangement, it is much inferior to the Physiology of Haller; and that some of its divisions imply a previous knowledge of other parts not already discussed. Thus in the Myology, there is a disquisition on what is called voluntary motion which depends on the agency of the Brain and Nerves, the doctrine of which is not considered till the succeeding volume. Neither is the author without some fondness for such an innovation in names as, while it renders the work more obscure, may occasionally subject him to a just charge of affectation. Thus, although there is no great harm in substituting the term Conarium for Pineal Gland, and Hypophysis for Pituitary Gland, and although there is some science in employing the term Epistropheus for Vetebra Dentata, I see no adequate reason why the right side of the brain may not still be called its right hemisphere, or why Crista Galli is not as good a name for the sharp vertical prominence on the inside of the Ethmoid Bone as Crista Interna.

Of the difficulty of arrangement, so as to comprehend the consideration of all the phenomena in their due relations, and yet to avoid repetition, no stronger example need be adduced than that of Bichât, an author of singular acuteness and ingenuity; and who, if he sometimes errs from haste, is generally elaborate and original; and who, unfortunately for science, was by a sudden and accidental death snatched from the world at that age when judgment usually

begins its triumph over imagination. Of this writer we have three distinct works; the first of which, intitled "Recherches sur la Vie et la Mort," professes, as its title implies, to distinguish, class, and explain, the various phenomena of life and death. As, however, it is almost wholly physiological and pathological, including scarcely any consideration of the structure of parts, I shall reserve to another place the analysis of its contents and opinions. [1812.]

CIRCULATING SYSTEM.

Circulation.—It is the present mode, from Bichât, to consider life as of two kinds, organic and animal, The first is common to vegetables and animals.

There is, however, this important difference between the constitution of vegetables and animals, that while the organic life of the former depends little on any external principle, that of the latter is greatly dependent, for the due performance of its functions, on animal life. Thus persons in a long state of rest and seclusion from mental irritations, have diseases of circulation brought on, and through them the animal and entire life shortened. On the other hand, certain excesses in the animal part of the frame produce derangement of the functions of organic life, which is disease, and may amount to either gradual decay, or sudden extinction of vitality,

The circulation seems to be a sort of intermediate function partaking of the nature of both lives, and is so far different from that of vegetables. The latter, however, seem to be influenced by certain causes which act on them not dissimilarly to the operations on animals. These are winds, sudden alternations of temperature, the influence of different kinds of food, &c.

Death in diseases of the heart, with syncope, lax texture, and empty cavities, is an evidence that the heart is the only organ of circulation; otherwise, though the heart were unable to contract, the blood would be returned into the right auricle by the action of the capillaries and veins.

Nervous Influence.—In conducting the experiments which I propose to make, it must be a matter of the greatest consequence to investigate how far the circulating system, of arteries, veins, or lymphatics, is acted on by the nerves; whether that action depends on any influence or change produced on their coats; or whether the brain or nerves act in any way, by their peculiar qualities, fluid or essence, *on the blood itself*, without the intervention of the coats, or only by them as the medium of transmission. I would destroy all the nerves leading to a part, and would observe its effect on the pulse, heat, and capacity of inflammation. If the blood-vessels are capable of carrying on the circulation after the heart of a frog is cut out, we ought to find the blood continually oozing out of the venæ cavæ beyond what they contain.

It is a proof that the irritability of the heart may be exhausted by excessive action, that even in the dead animal any violent irritation of the fibres disables them afterwards from acting from a slighter one, which would before have affected them.

Tonicity, &c.—Can contractility of tissue, which Bichât considers a principle of dead organization, and which continues after death, be exalted, as he expresses it, or increased by the powers of life? Is there any part of this power dependent on vitality? If so, either in this case the whole must depend on life, or else to this principle of dead matter, some other principle, derived from life, must be superadded. What is this power? It is not *contractilité organique sensible*, or voluntary power; it is not *contractilité organique insensible*, or irritability. Is it tonicity? These are all the vital powers which Bichât admits; and the last only remains as a known agent or coagent; or if this be not the case, and if tonicity be not the agent, then there must be some other unassigned power of life which attaches itself to contractility of texture, so as to cooperate with it in producing the contraction: and if this power be allowed to be essential to the production of a part of the effect, who shall deny that it may not produce the whole?

Bichât attributes tonicity to the influence of circulation in the part, and asserts that if the influx of blood into a part be stopped by ligature on the arteries leading to it, tonicity will cease. This fact being

admitted, it only follows that the circulation of the blood is a necessary condition of tonicity, as it is eventually, in fact, to the due performance of all vital functions. Still, however, the functions of irritability will continue for a certain time without it, as in intestines and muscles separated from the human body; and analogy would lead us to conclude that the same thing would take place with regard to the functions of tonicity itself. It is not, however, necessary to the loss of tonicity that the circulation in the part should be destroyed or even impaired; for it instantly occurs in the muscles of the face, and eventually in several other muscles when they are affected with hemiplegia, though the circulation in those parts appears, by every test, to be in no degree retarded or diminished. On the other hand, in several cases which I have seen of such a defect of circulation in one hand and arm, that no pulse was to be perceived in the radial, the humeral, or axillary artery, and the hand was like that of a dead corpse, there was no considerable flaccidity of the muscles, nor any sensible loss of muscular power on that side more than on the other.

From these facts it follows that tonicity is not immediately dependent on the circulation of the blood in the part, but rather on some unknown influence of the brain, although the function of tonicity will also ultimately cease, when the life is irrecoverably destroyed by the cessation of its circulation.

Topical Action of Vessels.—Abundance of instances might be adduced to shew an affection of the Vascular

System independently of the immediate action of the heart, and which is connected with vitality.

If, indeed, it should be contended that they are mere effects of certain modifications of elasticity, the difficulty is in no degree removed, but increased by the introduction of a new principle, which is the influence of the Mind on the mechanical structure of the part. It is much more reasonable to suppose that in all the cases these effects arise from affection in the coats of the vessels, increased or diminished according to the regular laws of animal life, though in these minute vessels no muscular fibres are demonstrable any more than in the Polypus, which nevertheless moves, and, like a Snake, swallows substances larger than its own body, and performs other functions of life.

If vessels are not of themselves capable of acting, by what process does Excretion take place, not merely of the simple parts of the blood, as serum, coagulating lymph, or entire blood, but of fluids which have undergone a new arrangement of parts, as milk ?

The Semen is another very extraordinary proof of the power of vessels to produce new and important arrangements of component parts of the blood ; for which a great length of vessel is appropriated.

The very same vessels, under a state of disease, will have their actions or motions changed, and will pour out different secretions, and even blood. The best, and I think indisputable, proof of a topical action is the circumstances of local inflammation, in which the vessels are obviously affected, distended,

&c. and often carry on their functions, so as to restore the health of the part, without any increased aid from the heart, which goes on as before. Now all these functions require, and indeed consist in, local movements, which must take place in the vessels themselves, and therefore demonstrate the existence of a power in them adequate to the effect. It is, however, no evidence of any vital action, contributing to circulation, in a state of health.

Original Distribution, and Changes, of Arteries. —It may be observed,

1st. That wherever parts are intended for the immediate performance of important functions, as especially for sensation, or secretion or excretion, they are supplied with a very large proportion of artery. This is the case with the brain, the nerves, the cutis, the testicles, membranes, the lungs, &c. 2dly. That where a part is supplied by one or more branches of an artery, if one is unusually large, one or both of the others are proportionably small, if not wholly wanting. 3dly. That when an artery supplying a part or parts is obstructed, other arteries leading to those parts increase in size so as to convey to them the same quantity of blood. 4thly. That when an occasional increase of any important function is to be produced, as of sensation, secretion, or excretion, (1) the arteries leading to the part concerned in it undergo a temporary enlargement or distention, which subsides after the purpose has been answered.

5thly. That a similar state of temporary enlarge-

ment subsists in various diseases, accompanied of course with an increased momentum of blood towards the several parts, and producing effects or symptoms which we cannot discover to be in any respect or degree salutary.

To suppose, indeed, every degree of movement which takes place in the constitution to be salutary, would be to infer that no excessive reaction ever occurs, and that no movement whatever is to be counteracted. Thus if a man has an artery cut, it must not be tied up, though death would be the infallible consequence of an omission conformable to this system ; and so in a variety of other cases. To presume this to be an universal law, is a petitio principii. The business of the medical philosopher is not to assume the principle, but, from attentive observation, to ascertain where it is applicable, and where not, and by this experience to regulate his practice.

6thly. That where a part becomes morbidly or permanently enlarged, as for example the thyroid gland, the artery supplying it becomes enlarged in proportion.

7thly. That on other occasions, the converse of the state (6) occurs, and the arteries shrink or are less distended, or convey less than the due quantity of blood.

8thly. That the two states (6 and 7) may take place in different arteries at the very same time.

Nerves of Arteries.—As all the arteries are abundantly supplied with nerves, we must suppose those nerves to have some important influence on those arteries. May not that influence be, in part at least, exerted on the vasa vasorum of the arterial coats, modifying their tonicity, or capacity of vital contraction?

Evidence of Nervous Power in the Arteries.—A Lady, a few days after delivery, as she was holding a cup of coffee to her mouth, suddenly lost the use of one hand. The seizurewas accompanied with the following circumstances. On one side there was a loss of muscular power, the pulse in the radial artery, and the heat, remaining in the natural state; in the other arm, there was a total want of pulse and heat, but voluntary motion remained perfect. Apoplectic symptoms gradually supervened, and the patient died in four days.

Tortuous Arteries.—Does not continued and unrelaxed action of muscles prevent the veins from being filled, and therefore the arteries from emptying themselves? and does not this explain the effects of straining exertions, and why in the tardigrada, who long use these motions, the arteries of the limbs are made to be tortuous?

May not the same tortuosity of arteries occur from any cause which impedes the circulation in the veins, as old age, &c. which diminish muscular exercise, in which, by alternate contraction and relaxation, different from fixed contraction, the blood is urged forwards in the veins, and does it not therefore stagnate in the arteries?

Capillaries.—The ease with which new granulations bleed, is a sufficient evidence of the influence of impetus of blood in the arterial system into the capillaries. [1815.]

None of Bichât's reasonings respecting the elective vital attractions of the capillaries, with regard to secretion, &c. apply to inflammation, or exclude my opinion thereon.*

A proof that the extreme vessels suffer something more than the effects of mere mechanism, may be derived from the phenomena of sweating. It is observable that when hot weather suddenly comes on, a man is generally able, without much or perhaps any sweating, to take exercise for several hours, and perhaps even a whole day. As, however, the heat continues, he begins to sweat, and it appears to me that the disposition goes on with increasing violence to the utmost extent. If now the weather suddenly becomes cold, notwithstanding he feels it to be so in a great degree, the cause existing in his constitution still continues to act, and he goes on for many hours sweating on the slightest exertion.

Faintness appears to diminish the retentive faculty of the capillaries of the skin, and thus occasion sweating; for it is evident both from the preceding and concomitant circumstances, that this species of sweating is extremely different from that which arises from the increased impetus of blood produced by heat or strong exercise.

Fear and nervous affections seem to unite these two states, first increasing the action of the heart, and immediately diminishing the tone of the extreme vessels in the skin, so that in these cases sweating

* Anat. Gen. ii. 495, 496.

immediately follows the first dash of blood from a palpitating heart.

In fevers, there certainly often appears to be the excessive contraction or spasm of the extreme vessels, of which Dr. Cullen speaks; for the vessels will go on many days resisting preternatural momentum of blood, without admitting of exsudation.

As the lax state of the extreme vessels in faintness evidently arises from the want of energy in the brain, dependent on diminished stimulus from defective sanguineous determination, may not this spasmodic constriction of the extreme vessels depend on the contrary cause, or the over stimulation of the brain by excessive determination of blood to it? This is rendered very probable from the phenomena, for in simple synocha, catarrhs, gout, rheumatism, and intermittents, in which there is rarely much determination to the head, there is not only no defect, but usually a great superabundance, of sweating; and that defect exists chiefly in typhus, and in the early stages of phrenitis, in which great determination to the vessels of the head, and over stimulation, are the characteristic qualities of the malady.

A certain stimulus of the blood itself in the vessels may be necessary to their healthy state of tone.

Veins.—The capacity of a greater or less dilatation in the veins does not require microscopical observation in order to demonstrate it. For,

1st. If you stroke away the blood from a superficial vein, as in the back of the hand, the vein

remains flat, as long as the finger firmly compresses it below the part so emptied, provided it be above the next anastomosis. The moment the pressure of the finger is removed, you see the blood return, and the vein resume its natural state of convexity.

Hence it follows, that the usual state of distention in veins is greater than what would exist in consequence of their contractility, were it not for the distending power of the blood.

2dly. The distention of a vein *beyond* the *natural degree*, does also on various occasions occur, and become apparent to the slightest observation. Thus mechanical compression of a vein makes it swell below the ligature, provided there be no near anastomosing vein to carry off the blood which would otherwise accumulate in it, and distend it. This is what continually happens from the ligature in the common operation of blood-letting in the arm.

3dly. The same swelling of superficial veins on the back of the hand, is readily produced by heating the part, as by immersing the hand in warm water.

4thly. Also from the use of exercise, wine, and warm drink.

5thly. A similar dilatation of veins beyond the usual degree occurs in various diseases, as in the veins of the foot and even legs of a person who has the gout; and on several other occasions.

On the contrary, in addition to the fact mentioned above, certain causes diminish the dilatation of veins: this is obviously the case from the abstraction of heat,

as, for example, in the back of the hand from dipping the hand in cold water.

The following circumstances are observable as to the circulation of the blood in the veins on the back of the hand, where the flow is visible, especially in thin and very old persons—

In myself, aged 58, who, though generally fat, have a rather lean hand:

1st. In health, the veins are usually fuller in the evening than in the morning.

2dly. The circulation in them is usually greater in them at the latter period than the former; for on compressing a venous trunk, and stripping out the blood between the pressure and the heart, the difference with which the blood returns at those two periods when the pressure is removed is sufficiently visible.

3dly. The vein has itself no power of carrying on the blood. For when a pressure is made on a trunk of it, it remains full between the pressure and the heart. [1813.]

Experiments on the veins on the back of my hand, half-past five, P. M. August 13, 1813, sitting in my carriage as it drove along; and having eaten not more than six or eight ounces since the day before at ten o'clock, A. M. yet in good health. Pulse 82, and rather full.

1st. On my compressing the vein, with the forearm horizontal, and the humerus as usual in the sitting posture, perpendicular, the blood nearer the heart did not go on, and empty the vein.

2dly. On removing the pressure, the impulse of the newly proceeding blood was perceptible at the same instant at the beginning and end of the column nearest the heart, which, in the preceding experiment, is represented as having been stationary.

3dly. On pressing the vein as before, and squeezing out the blood above the pressed spot, the blood did not flow back so as to fill the emptied part, while the humerus as before was perpendicular, and the fore-arm was horizontal. But

4thly. It did, under all the other circumstances, go against its usual course of circulation, and fill the void portion of the vein, when the fore-arm, as well as the humerus, was held perpendicularly downwards; and

5thly. When the whole arm was raised perpendicularly upwards, the part which was before filled again emptied itself, the pressure on the more distant part of the vein being still maintained.

In the two last of these cases it is evident that the blood moved by gravitation only.

The first shews that the vein has by itself no power of carrying on the circulation.

The second shews that the vis à tergo operates upon every part of the sanguineous column at the same time, just as if that column were a cylinder of wood or metal. This indeed may be clearly shewn by the phenomena of a common syringe filled with water.

The third experiment shews that a certain force of gravitation is necessary to overcome the resistance by the vein, and of the vis à tergo from the heart, &c.

conveyed through other venous branches, intermediate between that on which the experiment was made and the heart.

August 13, eleven, P. M. Pulse 80, and full; after dinner at six o'clock, drinking only water; sitting in a room which was warm; the veins on the back of both hands being extremely full, and my hands very hot.

6thly. On quickly and strongly opening and shutting my hand several times in succession, my fore-arm being horizontal as before, the veins became nearly flat, but after two or three seconds of rest, the arm being in the same position, they became as much swelled as before.

7thly. On pressing a portion of the vein, &c. as in Exp. 3, the blood flowed gradually backwards into the emptied part.

8thly. But it did not flow back under similar circumstances, when the humerus and fore-arm were both horizontal.

9thly. All the veins became quite flat, when the hand and entire arm were raised perpendicularly upwards.

Influence of the Heart on the Venous Circulation.—If it be true, according to Bichât, that the action of the capillaries is an oscillation, carrying on the circulation of the blood in them, independently of the vis à tergo from the heart; and that to this oscillation, and some action in or on the veins themselves, is owing the circulation of the blood through the veins; and if, according to the same author,

Inflammation is chiefly seated in the capillaries, and is an increase of the vital action of a part, it must follow that the oscillation of the capillaries, and, consequently, the independence of the circulation of the blood through them and the veins, on the action of the heart, must be greatest in inflammation.

How then shall we explain the fact, that in inflammation of a part, the blood passing through those capillaries into trunks of veins remote from the heart in the course of circulation, and far distant from any artery, does often in those trunks shew an impulse, demonstrably derived from each systole of the ventricle, to which it is exactly synchronous?

The Blood.—According to Bichât, the sanguineous system is the centre of organic life, just as the brain is that of animal life. The Blood is composed of two parts: one *recremental*, which is chiefly derived from the food, and is the basis of nutrition; the other *excremental*, which is, as it were, the fragments or residue of all the organs, and which furnishes the secretions and external exhalations. Sometimes, however, according to this author, these last functions pour out the productions of digestion which have not served as nourishment to parts; as in the urine and sweat after copious drinking, and of milk from that part of the blood which has not been assimilated by the nutritive process.

I do not know that either of these propositions is proved. It is by no means ascertained that when, at a very short period after having taken large draughts

of weak liquor, a man sweats or makes copious pale urine, any part of the fluid composing these excretions was individually that which he had so drank. The rapidity with which the secretion in these cases takes place, has, indeed, been considered as one of the most difficultly explicable phenomena in the whole animal economy; and it is certainly much more probable that, in both instances, the secretion takes place from the already elaborated blood, in consequence of a law of the constitution, by which the fluid taken into the stomach merely acts as a stimulus to the excretories, so as to guard against superfluity of aqueous fluid. That this is also true with regard to the milk is probable, not only from analogy, but from this additional fact, that the secretion of healthy milk is as much promoted by drinking pure water, as by drinking milk itself.

Coagulation, &c.—As Coagulation depends on some properties which blood receives from or retains by means of the living vessels, it might be well to see what effect would be produced by injecting into the vessels of living animals grumous or coagulated blood.

When John Hunter speaks of the blood coagulating by the stimulus of necessity, he mistakes the final cause for the efficient cause or means. The end is clear enough. In the inquiry how the effect is produced, he leaves his reader in the lurch.

To the cases in which blood is deprived of the power of coagulation, I may add that of syncope anginosa.

Serum is the substance in which the fœtus swims. Do not hydatids swim in a bag containing serum? If so, is not the bag formed by some process like that by which the decidua is formed in the uterus, at the commencement of gestation? It would be proper to inject the blood-vessels of the liver and lungs of sheep with hydatids in them, in order to discover whether those vesicles can be injected from them.

May not the yellow colour of the serum arise from the globules of blood suspended in it? July 4, 1809, I examined, in a microscope, serum which was of the usual yellowish colour, and found it abounding with blood globules, which looked faintly red in the microscope, even by the light of an argand lamp.

The redness of a part is certainly an evidence of a quantity of blood going to it, though the converse of this may not be true. The brain has considerable vessels going to it, yet its substance is white. Perhaps, however, only the coagulable lymph and other parts of the blood may go to the brain, and not the globules. It would be well to consider the chemical analysis of the brain relatively to the lymph, &c.; and also to examine its structure in a microscope, both whole, in very thin laminæ, and when diluted down with water having salt in it, and no salt.

A microscopical examination of the blood should be made in different parts; as in the vein immediately after the entrance of the thoracic duct, to see if any of the chyle globules remain in it.

Have the *Lymphatics* any power of propelling the blood? Can they be acted on by passions, or mental

affections? If not, each new quantity of chyle or lymph absorbed is an additional weight received into the circulation, to be removed by the circulating power. How would that operate?

The blood returned to the heart is not that which is thrown out by the left ventricle. But then as much as is taken from it must be supplied by absorption from food, and air in inspiration.

Secretion.—If each nerve, or set of nerves, has its own particular functions, so also has each set of blood-vessels. Some secrete particular fluids, as semen, milk, mucus, &c. Others produce bone; others nerve; and it is a proof of this, that if the part so produced is destroyed, a continuance of the same process which habitually supplied and continued their existence, reproduces them, with their due functions.

This power is, however, not always equally effectual. Cutis is incapable of being reproduced. So is the bony matter of cranium.

At other times it is interrupted and confounded, ceasing, like other vital powers, to act where it should act, and acting occasionally where it should not. Thus bone is often produced in membranes, or rather near membranes, in glands, &c.; and the matter of chalk-stone near tendons and ligaments. This, perhaps, may explain the nature of moles and false conceptions.

The motions of secretion itself are probably not produced by the action of secretory capillaries, but are merely the motion of blood from the heart, modified

by the capillaries. Hence they would probably cease, as soon as the progressive motion of the blood from the heart ceased.

ANIMAL HEAT.

The heat of no part exceeds that of the blood which circulates through it.

The heat of external parts is less than that of the blood which circulates through them.

The heat of the blood on the surface of the body, and in the extremities, is less than that of the blood in the heart.

The heat of an inflamed part never exceeds that of the blood which circulates through the heart.

Experiments.—1. In a state of health. To compare the heat of the blood in the right and left ventricles; because if the heat is derived from the lungs, the blood in the left ventricle must be hotter than that in the right.

2. To compare the heat of the stomach with that of other parts.

Examine the degree of heat in different parts of the same animal, and thus discover the part where it begins to be diffused. It is probable that the part where it is the greatest, is that from which it is communicated to the rest of the body. Try the effects of tying up arteries and nerves, as to the heat of parts. [1788.]

I cannot believe in the theory of Dr. Crawford, that heat is given out in the capillaries at the time that the blood acquires its dark colour. For were this true, it should happen that the heat should be greatest where the colour was darkest. On the contrary, the heat is always greatest where the blood is most florid, as in cases in which the blood is driven with considerable force through the capillary arteries of inflamed parts.

Bichât's theory of an animal secretion, and not a simple chemical decomposition, in the capillaries, is much more reasonable; and explains why, in a decollated animal, though circulation is mechanically carried on by artificial respiration, the usual quantity of carbon is extricated from the lungs, and therefore the usual quantity of caloric is fixed; yet, through the defect of the due vital process, the due quantity is not set loose in a sensible form, and therefore the animal becomes cold. Mr. Brodie, in order to complete the doubts which he has raised, should shew chemically that the heat is not received.

If the use of oxygen air were, according to Coleman, merely to supply heat to the animal body, one does not see why other species of gas received into the lungs should be injurious, unless it be true that they are not capable of parting with their caloric. Besides which, one might readily suppose that other means of supplying heat might exist, without the necessity of oxygen gas; and also, that oxygen gas itself, by a certain regulation of its heat, might be so managed as that any moderate quantity of it, un-

renewed, might be adequate for the support of life by respiration. Neither of these facts is, however, true. The oxygen gas completely disappears from being respired; and, what is extraordinary, and as it appears to me directly contradictory to the opinion of Crawford quoted by Coleman, more oxygen gas disappears, or is necessary to life, in a warm temperature than in a cold one. All the experiments of Spallanzani go to prove this fact, which is farther confirmed by the well-known property of cold to render certain animals torpid, during which state there is neither circulation nor respiration, nor any action of oxygen at all necessary to support such a state of constitution as is capable of being again excited into sensibility, and what is called capacity of action or activity, by a new application of heat. In short, the more there is of life, the more oxygen is necessary; and the less of life, the less oxygen is required.

In order to ascertain these facts, it would be well to make several experiments:

1st. As blood, by being tied up in an artery, assumes, according to John Hunter, a dark colour, or becomes more venous, to see if this would be the case when it was surrounded by a higher temperature, and observe the effects of various temperatures on the colour.

2dly. To try the same when the artery is surrounded with oxygen gas, and other gases.

3dly. To compress an artery partly, and observe the effect of this retardation on the colour.

4thly. To tie up an artery for the same length of

time, and promote motion of the blood in it by alternate pressure and relaxation, nearer the heart than the ligature, by means of some substance as wooden pincers, of full as low a temperature, or lower than the blood itself.

Experiments.—In order to examine whether the heat of an animal is produced by the secretion of carbon in the lungs, mixing with the oxygenous gas of the respired air, of which the caloric is set loose, make the following experiments:

1st. Destroy the power of respiration in an animal, without wasting his blood, by dividing the spine between the atlas and dentata.

2dly. Observe the state of his heat in the rectum and thorax, when the division is first made.

3dly. By pressure get rid of all the air, or as much as possible of that which was in the lungs.

4thly. Continuing the pressure, introduce a tube with double bellows into the trachea, and firmly attach it. Let the suction pipe of these bellows communicate with a large receptacle of atmospheric air, which, by long agitation with lime-water, has entirely, or as much as possible, lost its carbonic acid. This receptacle should be graduated, so as to know its solid contents.

If it be true, according to the opinion of Crawford, Lavoisier, and others, that the heat of the body is chiefly derived from the caloric derived from the air during the absorption of oxygen, and the evacuation of carbon, would it not be possible to examine whether the quantity of heat is really lessened in the mass of

air which remains, when an animal, by breathing in it a certain length of time, has caused the disappearance of a considerable quantity of oxygen ?

If the heat of the animal body is produced by respiration, one would suppose that it would be proportioned to the frequency or depth of respiration; not merely to the frequency, for it may be very shallow, but to the actual quantity of air inspired and expired in a given time, proportionably to the size of the animal. That this is the case, is not proved, though much might be done to prove it by experiment.

Here, however, another point is necessary, as one should presume; and that is, whether the heat would not also be modified by the relative quickness and strength of the pulse, or, in other words, the quantity of blood also circulating in a given time through the lungs.

No, say the supporters of this opinion. These points we cannot ascertain ; but if, according to the opinion of Ellis, carbon be emitted from the lungs during expiration, and as much carbonic acid is formed as is precisely proportioned to the quantity of oxygen which disappears in the inspired air, during which the caloric of the oxygen gas is absorbed, we can always judge of the heat that should be produced by the quantity of carbonic acid actually in a given time formed.

Now here observations and experiments may be applied. In certain nervous affections, as in Miss H. the pulse was natural, and the respiration was preter-

naturally quick; and the venous blood had the florid colour of arterial blood. Therefore one effect of preternatural breathing, which was the florid colour, occurred. But in this case was more carbonic acid formed? Was more heat produced?

The former question I cannot answer. The second I believe I can.*

Again, è converso; after Epilepsy, the heart beating very strongly and quickly, and respiration being preternaturally slow, the arterial (temporal) blood is often black, from defect of respiration. Now was there, in this case, less carbonic acid formed? Was the heat of the body preternaturally low?

The first question, as before, I cannot answer. To the second I can reply. (Case of Mr. S.)†

Another point. Could not it be observed by experiment whether, if a man were himself to breathe for some time, at the usual depth, 36 times in a minute, which is double the usual frequency, his heart all the while beating much as before, the carbonic acid would be increased above the usual degree, and the heat of the body also increased?

RESPIRATION.

Respirations proportionably to Pulse.

G. Three-quarters past ten, P. M.
sitting and breathing naturally R. 20 P. 80

* See Nervous Affections. † See Cases of Epilepsy.

G. Breathing designedly preternaturally quick and deep ... R. 52 P. 92
Do. Again almost immediately do. R. 52 P. 100
Do. Naturally almost immediately R. 19 P. 84
Do. A minute after, artificially quick and deep ... R. 56 P. 104
M. Naturally ... ... R. 16 P. 68
Do. Preternaturally quick and deep R. 60 P. 64
Do. Afterwards naturally ... R. 17 P. 70
Do. Preternaturally quick and deep R. 56 P. 76
S. Naturally ... ... R. 17 P. 68
Do. Preternaturally quick and deep R. 48 P. 64
M. Breathing preternaturally slow R. 5 P. 71
Do. Do. ... ... R. 3 P. 70
Do. Do. ... ... R. 1 P. 74

[July 22, 1809.]

M. ... ... R. 1 P. 80
Do. Naturally ..... R. 16 P. 75
Do. Do. ... ... R. 18 P. 76
Do. Do. ... . R. 18 P. 78
Do. Preternaturally ... R. 8 P. 75
Do. Do. ... . R. 6 P. 79
Do. Half-past ten, P. M. naturally R. 18 P. 71
Do. Preternaturally ... R. 68 P. 76
G. Naturally ..... R. 25 P. 96
Do. Preternaturally quick ... R. 66 P. 110
Do. Preternaturally slow ..... R. 4 P. 96
M. Quarter before eleven, holding breath (inspiration) at rate of half minute ... R. 2 P. 62
Do. In expiration, do. do. do. R. 2 P. 72

M. Natural breath ..... P. 66
Do. Half a minute inspiration ... R. 2 P. 70
[July 23, 8 P. M.]

According to Haller and others, inspiration evacuates the right side of the heart, and expiration fills that and the cavæ and jugulars. Drowning, carbonic acid gas, hanging, &c. which stop respiration, do the same things. It is proper, therefore, to inquire how far the infarction of the lungs by blood, so as on some occasions to make them sink in water, may not be the effect of difficult or impeded inspiration, rather than the cause of it.

The effect of exspiration to fill the jugulars, and inspiration to empty them.—This day, June 17, 1809, I distinctly saw in Hon. Mrs. V., in whom slight pressure on the external jugular easily distended it, inspiration regularly empty, and expiration immediately fill, that vessel, a hundred times in succession.

The posture of quadrupeds, which support their bodies partly on their fore legs, prevents that aid to impeded respiration, which in man is given by the contraction of the supra scapular muscles.

MUSCLES OF EPIGLOTTIS.

It having been doubted whether there exist any muscles intended expressly to draw down the Epiglottis, I have taken various opportunities of examining these parts in other animals, as well as man.

Mr. G. Norman and myself saw the distribution of the epiglottic muscles most distinctly in a horse which had died of the farcy, a disease producing inflammation and ulceration just within the glottis on the left side, in consequence of which the muscular fibres on that side had become preternaturally turgid and red. The origin of this muscle was as clearly traced as any in the body, from the membranous lining closely attached to the posterior part of the thyroid and cricoid cartilages, and which forms the inner coat of the pharynx. From hence this muscle passed obliquely upwards and forwards, and was inserted all along the edge of the epiglottis, nearly from its point, transversely over its upper surface, as far as the median line, and still farther forwards into the anterior part of the pharynx, somewhat on one side of the root of the epiglottis. It appeared to us that the whole should be considered as one muscle, with three different origins, and two insertions, rather than two muscles, according to the common nomenclature of the anatomy of the human subject. The structure, insertion, and course of the epiglotticus on the other side were sufficiently apparent, though the fibres were of a considerably paler colour.

That the use of this muscular structure was to depress the epiglottis was evident; because, first, when the epiglottis was raised up, the muscle was stretched, which was before wrinkled; and secondly, when by pulling the muscle, its natural action was imitated, the epiglottis was drawn down over the glottis.

It must obviously have great power in drawing down the epiglottis ; so as entirely to cover the opening into the larynx ; for in the horse the arytenoid cartilages forming the rima glottidis, are so rigid, and the arytenoid muscles so small, as to appear utterly inadequate to the purpose of entirely closing the aperture.

[Aug. 15, 1811.]

Though it may be true that in the act of deglutition the muscles which depress the epiglottis may not be under the necessity of acting, yet they are undoubtedly not given for nothing, and may, on extraordinary occasions, be of great use ; as for example, in cases in which the epiglottis may have become morbidly rigid, which was the case with the late Mr. Cimador, the singer, who from the incapacity of closing the larynx by the epiglottis, was threatened with suffocation whenever he attempted to swallow, and at last was nearly unable to take liquids, though he could swallow soft solids, as oysters, &c. In this instance the epiglottic muscles might undoubtedly for a considerable time have assisted in depressing that part.

It is highly probable, also, that in the case of broken-winded horses, and of children and other human creatures under certain circumstances of difficult respiration and of coughing, the epiglottic muscles may assist the transverse and oblique arytenoid muscles in closing the orifice of the glottis, so as to enable the patient more perfectly to retain, and according to circumstances more suddenly or more slowly to emit, his breath.

MUSCULAR MOTION.

Muscles are of two kinds, *voluntary*, as those of the limbs, &c.; *involuntary*, as those of the heart, intestines, &c. One would add those of a mixed kind, which are sometimes voluntary and sometimes otherwise, such as those of respiration, as the diaphragm, the intercostal muscles, &c. and the sphincters, were it not contended by some physiologists that these are all voluntary muscles; so that even during sleep there is a sort of imperfect consciousness, which is sufficient for volition, so far as respects the muscles of respiration; just as persons turn in their beds during sleep, using the voluntary muscles for the purpose of removing the painful lassitude which has arisen from long continuance in one posture.

On this principle, Hunter, Bichât, Wilson, and perhaps others, infer that apoplexy destroys life, by annihilating the functions of the voluntary muscles of respiration.

There are, however, many difficulties in the way of this theory. In order to have a clear conception of the point in debate, it will be necessary exactly to understand what is meant by Will or Volition; and here I think it will be allowed that volition implies a motive with which an action is performed; and as all motives are the desire either to shun uneasiness, or obtain gratification, volition necessarily supposes

experience, and a knowledge of means in order to obtain certain ends.

Now it is certain that respiration occurs prior to all volition; for it takes place in the infant immediately at its birth, before it has any experience at all; and it is natural to suppose that though by degrees the muscles of respiration come under the power of the will, yet that, as the animal continues through life to suffer the occasional cessation of consciousness, during sleep, &c. the same cause which produced the action of respiration without volition in the new-born infant, still continues on certain occasions to produce it in the adult. On the contrary supposition, I would wish to ask, when the animal exchanges involuntary for voluntary respiration? and by what symptoms, or by what changes of structure, this transfer of power is marked?

It may, however, be urged that there exists, in favour of this opinion, the strong analogy of the action of sucking, which occurs in infants almost as soon as they are born; and that this action is certainly performed by muscles which are acknowledged to be those of voluntary motion. To this it may be answered, that motions which were originally automatic, may certainly become merely voluntary, when the necessity for the former condition ceases; and I see no reason why the automatic power of sucking should continue beyond the stage of early infancy.

The instance of turning in bed during sleep is certainly not altogether analogous, because it is only occasional and momentary, whereas that of respiration

is uniform and constant; so that if volition were necessary for this purpose, it is incredible that a man should not frequently start out of his sleep in a state of suffocation, from having forgotten to breathe. If, however, this and the preceding example be perfectly analogous, we are in fact attempting to explain one difficulty by the adduction of others equally great and insuperable.

In fact, the influence of apoplexy on the muscles of respiration is very different from that which is usually produced by it on other voluntary muscles; the voluntary power of the muscles of the limbs on one side being often in a moment destroyed by hemiplegia; while even in fatal cases of apoplexy, with a total privation of consciousness, respiration will continue, sometimes inconsiderably impaired, for many days.

Many years ago I was present at a set of experiments made in Windmill-street, by the late Mr. Cruikshank, from which it appeared that when the communication between the brain and muscles of respiration was intercepted by suddenly cutting through the nerves supplying those muscles, the animal died; and when opened, was found to have the lungs engorged with dark-coloured blood, just as in those animals which have never breathed. He found, also, that circulation and life could be prolonged by artificial respiration.

These experiments have lately been repeated with modification by Mr. Brodie; who, after the communication had been completely destroyed by cutting off

the head of the animal, the carotid and vertebral arteries having been previously secured below, also imitated the natural process of respiration, by blowing atmospherical air into the lungs of the animal, and thus found himself able to maintain for an indefinite length of time the motion of the heart.

From these facts it certainly appears to follow that the action of the heart depends on respiration, and respiration on communication with the brain.

On the other hand, in the case, which I communicated to the Royal Society, of a child born at the full time, without the smallest vestige of cerebrum or cerebellum, in which neither the retina, par vagum, nor any other nerve whatever, could be traced into the cranium, though both were sufficiently obvious without it, and in which the medulla oblongata existed only as high as the sulcus above the corpora pyramidalia and olivaria, the medulla spinalis and all its nerves being perfect, the respiration went on with great regularity for twenty-four hours after it was born. It is certain, also, that this infant swallowed food ; and twenty hours after its birth, though then unable to swallow, it sucked the finger when I introduced it into its mouth, and on my tickling the soles of its feet, raised them up with considerable force and agility, by bending and lifting up its knees.

Let us examine by what apparatus these different movements are performed.

In sucking, an animal first opens its lips, then attaches them firmly round one portion of the surface of the substance, and makes a vacuum in the back

part of its mouth by drawing down the tongue, and occasionally by depressing the lower jaw.

The first action is performed by the levatores muscles of the upper lip, and the depressores of the lower, together with the angulares, zygomatici, and buccinatores. The lips are then steadily attached to the substance by the orbicularis. The tongue is drawn downwards into the throat by the muscles which attach the os hyoides and thyroid cartilage to the sternum and other parts, as the sterno-hyoideus, sterno thyroideus, and omo-hyoideus. The lower jaw is depressed by various muscles inserted into the os hyoides.

When by means of these muscles the fluid is received into the mouth, the velum pendulum palati is lifted up by the azygos muscle, and the fore-part of the tongue is raised against the palate by the hyo-glossi and genio-glossi.

Thus the fluid is pressed backwards and downwards into the pharynx, which rises to receive it by the contraction of the stylo pharyngæi, stylo hyoidei, and various other muscles. When received into the pharynx, it is pushed onwards by the various pharyngæi and constrictores.

The nerves supplying these muscles are derived from the superior and inferior maxillary branches of the 5th pair, from the portio dura of the 7th pair, from the glosso-pharyngæal and vagi of the 8th pair, and from the 9th pair ; all of which are considered as nerves of voluntary motion.

And yet these motions, complicated as they are, are performed by every living mammiferous animal

with perfect effect at the first trial, a few hours or even minutes after its exit from the womb ; and they were most effectually performed by that acephalous fœtus whose case I have described, and in whom no medium existed between mind and body.

I. *Voluntary* muscles have certainly an action or contraction which is the result of life, but which occurs without either, 1st, our knowledge of the application of any stimulus, 2dly, our consciousness of the action in general, or, 3dly, the influence of our will. This action, however, is derived from the brain through the nerves, because it ceases immediately when that connection is destroyed. Thus when pressure is made on certain parts of the brain, the muscles of the opposite side of the face immediately lose part of their contractile power, and the lip and cheek on that side fall. So, also, when pressure is made on the facial branches of the 5th pair of nerves, after their exit from the skull, the same muscles droop, but for obvious reasons on the same side as that on which the pressure exists. Just in the same manner the different sphincters lose their tonic power, when the nerves supplying them become paralytic.

II. The same muscles have a contractile power, which is the result of a stimulus on the part without our volition ; nay against our volition, if the stimulus is very strong ; as in the acceleratores urinæ, &c. diaphragm, &c. from sympathy.

III. They have also the stimulus of motives, through consciousness.

These seem to be all the powers of voluntary muscles, or the muscles of animal life.

Involuntary muscles, or those of *organic* life, have the following powers :

I. To act from stimuli applied to them without the consciousness of the animal, or in consequence of any mental conviction of a valuable end ; *i. e.* a motive.

II. To have their actions modified by certain impressions on the organs of sense, or on the mind ; in both cases also without any conviction of a valuable end, *i. e.* a motive.

The first of these powers is illustrated by the action of the heart, and that of the absorbent system, and alimentary canal.

The second is shewn by the effect of light, sound, and other sensations, and of various mental emotions, in increasing or diminishing the action of the heart and alimentary canal, and the state of blood-vessels and the secretory organs ; all of which actions are performed wholly without that intermediate train of phenomena, which constitutes volition.

Observations on Hunter on Muscular Contraction and Elasticity.—The common action of a muscle is contraction, bringing the origin and insertion nearer together. It must also relax, permitting the two ends to recede one from the other. They accommodate themselves to the distance of the two ends ; and he thinks they can become almost immediately longer than they are in the natural state of relaxation, or that to which they are brought by

natural elongation. He thinks that in addition to the common operation of a stimulus, muscles may be made to contract by the cessation of an accustomed impulse. The sphincter iridis contracts, where there is too much light ; but the radii contract, when there is little or no light.

I do not think this illustration accurate. The actions of the sphincter iridis, (if there is any, which I doubt,) and radii, are in some degree antagonizing. When light is applied, the sphincter contracts and elongates the radii. Diminish the light, and the sphincter relaxing, the preternatural elongation of the radii ceases. I suppose that this is not peculiar to the radii of the iris, but that all muscles elongated beyond their due bounds are restored to their natural state by their common tonic power, or the stimulus of the usual impressions which constitute life. When a greater antagonizing power is applied, this tonic power is overcome ; when the greater ceases, the tonic power acts to the extent of health.

He afterwards adds, that a cessation of stimulus requires its own peculiar stimulus to produce that cessation. For he says, that a muscle long stimulated will not fall into relaxation on the removal of that stimulus ; a muscle remaining contracted after absolute death, when the stimulus of relaxation cannot be applied ; so that a muscle can as little relax after death, as it can contract.

This language is highly unphilosophical ; as it makes the term stimulus expressive of all the various changes which can take place in muscular action, however

different they may be from each other. We know that a certain degree of motive will enable what are called voluntary muscles so long to contract themselves, that the abstraction of that motive, or the application of any other, shall no longer be able to make them relax. This happens to Fakirs, and various other visionaries, under the influence of religious enthusiasm. The same thing occurs to persons, who from pains in the joints have long accustomed themselves to a certain posture, and who, though the pain has subsided, and there appears to be no disordered organization of the bony, ligamentous, or tendinous parts of the joints, are no longer, or with difficulty, able to admit of elongation of the contracted muscles. This certainly shews that such a new arrangement or affection has taken place in the component parts of those muscles, as to put them out of the reach of the common causes of relaxation or elongation.

If, also, a muscle remains contracted after death, this also shews that a similar state has been produced.

But in both cases it would be an abuse of language to call the abstraction of that state a *stimulus*; or to designate the power producing contraction, and the power which removes contraction, by the same name.

The truth of this appears from what follows even in himself. "Whatever becomes a stimulus to one "set of muscles, becomes a cause of relaxation to those "which act in a contrary direction; and whatever "becomes a stimulus to one part of a muscular canal, "where a succession of actions is to take place, "becomes also a cause of relaxation in the part

"beyond it, as in an intestine, muscular contraction, "&c. &c."

This is easily explained in the following way. Muscles, like the organs of sense, seem capable of attending only to one stimulus at once; the greater overcoming the less in different organs, if the greater is accompanied with pain. Therefore when there is a stimulus on the intestine, or on the bladder, the associated muscles of expulsion are acted upon, and that of the sphincter ceases. This seems to me the sole *rationale* of the stimulus of cessation.

Muscular motions are voluntary, involuntary, and mixed. Of the mixed kind *respiration* is usually quoted. All sphincter muscles should be considered as usually in a state of involuntary contraction, with a power of occasional relaxation, and a power of voluntary contraction. The orbicularis palpebrarum has a disposition to contraction peculiar to itself. Its relaxation takes place in a state of watchfulness, and it contracts itself only when it is tired of relaxation.

He adds, however, what is more likely to be the just reason, that it may be considered as an elongator to the levator palpebræ, with a disposition to relax while that is contracted, but contracting when the elevator is tired.

This in fact is exactly similar to what happens in other cases, in which, when a motion is applied through the mind to one muscle, its antagonizers suffer elongation. It is only, however, to a certain extent, that the orbicularis muscle can act without the stimulus of life; for at death the eyes remain half

opened, and must be shut by another person in order to be closed. Hence the phrase of closing a person's eyes. In healthy sleep the eyes are perfectly closed; but when the faculties of the brain are disordered, the patient sleeps with his eyes only half closed, as in death. This is an instance of that middle state of stimulus which exists between voluntary and involuntary muscles; that is, of muscles acting through the brain, without consciousness, and yet not by their mere irritability or vis insita. The sphincters themselves seem to be acted upon in the same way; for their contracted state does not remain, or remains very imperfectly, if the nerves going to them are injured, as in paralysis of the lower extremities from pressure on the spine. And even in some cases of hemiplegia, the upper eyelid of the affected side drops.

"The natural contraction of the orbiçularis "muscle is involuntary; the relaxation, both natural "and occasional, is involuntary."

Certainly; just as in other cases. Every muscle is involuntarily in a certain degree of contraction. Employ an antagonizer, and it relaxes itself involuntarily.

"The sphincter ani, &c. has a power of contraction "just sufficient to resist the pressure of the air and "fæces, &c. similar to what happens in muscular canals."

I am not clear that sensation has not a great deal to do in this. When a great and uneasy irritation takes place at the rectum, we sometimes forcibly contract the part, till it becomes so tired that all farther contraction is in vain, and we no longer use the will to oppose the stimulus of exertion which occurs in the

intestine itself, and which we even sometimes voluntarily aid by the abdominal muscles and diaphragm.

In cases, however, in which there is little or no consciousness, as in many diseases, there is great irregularity in this respect, the sphincters of the urethra and anus sometimes scarcely acting at all; in consequence of which the stools and urine come away involuntarily. In other cases, less in degree, where there is more sensation, with great loss of voluntary strength in the whole body, or of sensation in the particular parts affected, the sphincters act more than the expulsory muscles. Hence stools and urine are always retained; more especially the latter: because it is less attended to, and because we are unacquainted with any specific medicines, by means of which we can make the bladder evacuate its contents, as we can the bowels by purgatives. From all these considerations, I do not see any difference in their functions between the sphincters and other muscles.

What he afterwards says, by way of distinguishing elasticity from muscular power, is, I think, very imperfect. He says that a muscle has "not the power of "elongation, which would be an act of restoration, "such as exists in elasticity." If by the word power he means action, something original, and as it were independent of external circumstances, I agree with him; but I say, also, that on the same principle a muscle has not the *power* even of contraction. If, however, by the word *power* we understand *capacity* or *aptitude*, why then a muscle when it has suffered contraction has as much a *power* of returning to its

natural state of elongation, when the cause which made it contract is removed, as it has of contracting when the cause is applied. It has also a *power* or *capacity* of being elongated beyond its natural state by the operation of another cause. This is just what happens in the case of elasticity. The only difference is, that muscular motion is not in proportion to the mechanical impulse, and that it takes place sometimes without any mechanical impulse at all. These are the respects in which muscular action or movement differs from elasticity. To which may be added, what he afterwards mentions, that the action of muscles may be regulated, as to degree or gradation, in a very different manner from elastic bodies.

On the Elongation of Relaxed Muscles.—If I understand him on this subject, he asserts that there are three states or conditions in a muscle; a state of contraction, and consequently shortening; a state of rest, relaxation from action, or inaction, in which without acting it is relaxed in the same position; and, thirdly, a state of recovery, elongation; that is, a return to its former length. Mere relaxation in the contracted state does not enable it to perform fresh actions. It must for this purpose revert to the state of natural elongation, or the state of recovery. For this, he says, that some elongator is necessary. This elongation is performed either by other muscles separately, by the addition of elastic parts, as ligaments, the coats of arteries, &c; and sometimes both conjointly.

Now in this he appears to me to be wrong. An elongator is not always necessary. Certain vital powers, acting on or in the part itself, are often adequate to the purpose. This we have already seen happens with regard to the sphincter ani and vesicæ. It is also true with regard to the heart, which when cut out of the body, and entirely cleaned from all the blood in its cavities, contracts and relaxes alternately, though the motion is produced by a pin which remains sticking in it. In all these cases, the muscles revert to their natural state of elongation, or their state of recovery, without the aid of any elongator. If the same thing does not happen in other muscles, it is because their power of natural elongation happens merely to be insufficient to overcome the resistance which is made to them, without the assistance of counteracting ligamentous or muscular elongators. It appears, however, that they have the power in a certain degree, and therefore, that the proposition itself is erroneous.

The subdivision and arrangement of the respective uses and application of elasticity and muscularity to their different purposes are very excellent.

Inquiry how certain Affections of the Mind or Brain influence the Motions of Involuntary Muscles.—Let us first consider what are the chief muscles of this kind in the human race.

1st. The Orbicular and Radial Muscles of the Iris.—2dly. The Œsophagus.—3dly. The Stomach.—4thly. The Intestines.—5thly. The Gall Bladder

and Ducts.—6thly. The Ureters.—7thly. The Urethra.—8thly. The Bladder.—9thly. The Uterus.—10thly. The Heart.—11thly. The Arteries. —12thly. Excretory ducts, (or Secretory Arteries.) 13thly. The Skin.*

Let us next examine what are the causes which act on involuntary muscles through the medium of the mind or brain.

1st. Sensations, through what are called the five senses.

2dly. Ideas or recollections of sensations, whether single or in accustomed trains.

3dly. Imagination, which is fanciful relation or train, but never any new single sensation. From these two arise judgment, whether true or false, and conclusion as to cause and effect; which produce passions and affections.

4thly. Health, and certain states of disease in the brain; some of which often give occasion to modifications of the two former heads.

5thly. Health, and affections of other parts of the body, some producing, and others not producing, sensations, or consciousness of their existence?

I. With regard to the orbicularis or sphincter iridis, *first* when light falls on the retina in a healthy state, the sphincter contracts itself, and the pupil of the eye is diminished in size. Remove the light, and

* The Iris is not strictly muscular.—Are the Gall Bladder, Uterus, Urethra, Skin? The Arteries; except the Aorta, and the Excretory Ducts have no visible muscles.—Describe by what nerves these several parts are supplied, and see whether the parts can be influenced by mechanical stimuli.

the radii, which are probably stretched beyond their due bounds, contract to their usually healthy or middle state, and in a certain degree open the pupil. This state is probably proportioned to the degree of light. If that were wholly removed, the pupil would probably be wholly dilated. This, therefore, may, strictly speaking, be considered as the natural state of contraction in the radii. The *second* set of causes do not, so far as I know, operate on the iris. With regard to the *third*, certain diseases of the brain, as inflammation, or high degrees of nervous irritability, often dispose the pupils for a great length of time to contract themselves almost to a point; as, on the contrary, pressure on the brain causes the sphincter almost wholly to lose its motion, and, therefore, the pupil becomes greatly dilated by the superior contraction of the radii. *Fourthly*, various disorders of other parts influence the state of the iris, through the medium of the brain, either with or without sensation. Thus the pupil is dilated by sickness, and by faintness.

II. In certain cases of hysteria, produced by mental emotions, the inverted peristaltic motion, constituting globus hystericus, appears to originate in the œsophagus and pharynx, and to be confined to these parts.

III. *First*, the influence of certain smells and tastes on the muscular fibres of the stomach is well known, from their exciting nausea and vomiting. A total suspension of the natural action of the stomach, and even vomiting, is sometimes produced by pain in

different parts of the body. *Secondly*, they are also produced by various ideas, mental associations, and passions, as the recollection of emetics; and by objects or events, which excite grief, surprise, or aversion. *Thirdly*, by concussions, inflammation, extravasation, and other disorders of the brain itself. And, *fourthly*, vomiting is produced by syncope, and by the irritation of a calculus in the kidney, though it occasions little or no pain in the part immediately affected.

IV. I know of no immediate effect produced through the brain on the intestinal canal by any simple sensation; but many of the causes comprised under the second head have a very obvious power of influencing its actions. This is the case with all the various causes of hysteria, in which there is evidently an inversion of the natural peristaltic motion, beginning in the colon, and extending itself from thence through the stomach up to the œsophagus and pharynx themselves. So also grief and surprise will often suspend the peristaltic motion, sometimes even producing violent spasmodic stricture or colic; and fear will occasionally increase the natural action, so as to produce sudden and violent diarrhea. Under the third head, the greatest possible inactivity of the bowels often arises from those states of brain which constitute madness. Various affections of other parts of the body, either with or without sensation, influence the motions of the intestinal tube; but it would be no easy task to decide how far these effects are produced through the medium of the brain.

V. Various mental affections, accompanied with

surprise, will often bring on fits of gall-stone, which are sudden efforts of the gall bladder to expel biliary concretions.

VI. The same is true with regard to fits of gravel, or the passage of urinary calculus from the kidnies, through the ureter, to the bladder.

VII. I am also much inclined to believe, that strictures in the urethra, if not wholly produced, are at least capable of being greatly aggravated and continued by certain mental associations.

VIII. With regard to the exact classification of the action of the bladder, I am by no means satisfied. When any obstruction to this evacuation occurs, we assist it by holding the breath, and strongly contracting the abdominal muscles. But that the bladder has a strong expulsory power, independently of any assistance from the pressure of the abdominal muscles, is certain; for in the experiments of Haller, animals, whose diaphragms and abdominal muscles were destroyed, were nevertheless able completely to evacuate their urine. The question, however, still remains, to what cause shall we attribute this contraction?

When the bladder is emptied by evacuation, its sides altogether shrink and contract, leaving not the smallest cavity within. By degrees, as the urine is poured into it through the ureters, it is again distended. When it contains only a small quantity, the natural approximation of the sides of the urethra, and a middle and involuntary contraction of the sphincter, are, probably, sufficient to prevent the exit of the urine. As, however, the bladder becomes

more distended, its muscular fibres are more disposed to involuntary contraction, and thus expulsion would probably occur, were it not counteracted by volition on the sphincter, excited by the sensation of uneasiness produced by the distention itself. If, however, that volition does not take place, then the common contraction of the muscular fibres of the bladder may of itself be sufficient to overcome the slight involuntary resistance of the sphincter, and thus pour out the whole of its contents. Nevertheless, as far as I am able accurately to distinguish my own sensations, I think I perceive that under less degrees of distention, which are far from amounting to uneasiness, I can voluntarily contract the bladder itself, so as to evacuate the urine, while I continue to respire in the natural way, and therefore without any exertion of the diaphragm or abdominal muscles. It is possible, however, that others may not agree with me in this opinion, and may conclude the bladder to be altogether an involuntary muscle.

I know of no proof that its action is either promoted or diminished by any simple impression on the organs of sense. It is otherwise, however, with regard to various mental associations and affections. It is, probably, by such a process, that some persons, "when the bagpipe sings i'the nose, cannot contain "their urine for affection." A similar want of retention often arises from fear, not only in man but brute animals. Much stress ought not, however, to be laid on these examples, as the effect may arise either from a suspended contraction of the sphincter of the

bladder, or from an excessive action of the abdominal muscles. To both these causes united is probably owing that involuntary discharge of urine which frequently attends the paroxysms of epilepsy; to which may be added, in hysteria, a preternaturally copious and rapid accumulation of the secretion itself.

IX. The womb and its appendages.

X. The heart. It seems to me that any sudden or unusually violent impression on the brain, through the organs of sight and hearing, may increase the motion of the heart. Such may be the instantaneous effect of an unexpected or vivid flash of lightning in a dark night, or of a gun suddenly fired off by one's ear. Pain, when sudden, will also increase the heart's motion; but if long continued, usually diminishes it; and when very violent, often brings on syncope. Many pleasurable sensations very evidently increase the action of the heart, I do not, however, know that any obvious effect is produced by smells or tastes, except as they operate through the means comprised under the second head; that is, by mental association.

It is, indeed, probable that vitality itself, and, among others of its constituents, the tonic power of muscles, is supported by stimuli on the brain through the different organs of sense. Hence we find that the motion of the heart is comparatively slow during sleep, but that it becomes immediately quicker when we awake, and receive the impressions of light and sound. Every physician must have observed this to happen, without any movement of the muscles usually called voluntary; and a great number of experiments,

which I shall hereafter relate, convince me that the change does not arise from any slight acceleration of breathing. In this case, however, some effects may probably arise from the coincidence of the various causes specified under head II.

In this way, impressions on all the senses, exciting mental associations, and the passions and affections to which they give birth, have a most extensive and powerful influence on the motion of the heart. Grief, jealousy, disappointment, or hope deferred, evidently weaken it; and anger, joy, sensual desire, hope, surprise, and even fear, in its commencement, as evidently increase it, sometimes even to a fatal degree. Consequences, similar to these in kind, arise from a recollection of such emotions, or even from the mere images of them presented to the mind in dreams.

The heart seems also capable of being primarily affected by disorders acting immediately on the brain. Thus extravasation into the ventricles, or between the membranes, of the brain, or a mere watery state of the substance of that organ, will produce an excessive slowness of the pulse. A Lady at an advanced period of life, whom I first attended in consequence of disease in the head threatening apoplexy, continued for six years afterwards to have a regular pulse not exceeding twenty-four beats in a minute. During this time she walked about, and performed the usual duties of her family. She had no general affection of breathing, but once in the period, which I have mentioned, was seized with a pleurisy, which raised her pulse to sixty

in a minute, and from which, after two or three bleedings, she recovered. When she died no other disorder appeared.

Haller, John Hunter, and many succeeding physiologists, attempt to shew that the functions which constitute vitality are independent of the animal functions derived from the brain; and that disorders of the brain, as for example the apoplexy, when they impair the action of the heart, do so by destroying the action of the voluntary muscles employed in respiration. As this theory necessarily infers the existence of sensation, through which the mind is stimulated to act on the respiratory muscles, it will naturally be objected that respiration is equally continued during sleep, in which all perception ceases. To this objection, however, it is replied that other muscles, which are acknowledged to be voluntary, act under like circumstances. Thus persons shift the position of their limbs or body during sleep. Many examples of the same nature might be quoted. The general inference is, however, by no means exactly logical; because, though it were true that voluntary motions in certain muscles occasionally took place without consciousness, or, at least, without any recollection of the stimulus which produced the act of volition, it would by no means follow that the same stimulus should act for many months together, as in the case of respiration, without once exciting any consciousness of its existence, or consequently of the motions to which it gave birth. Neither, if in those cases in which a slight inconvenience occasioned

an action of relief unattended with consciousness, could it be justly inferred that in other cases, so important to the life of the animal as respiration, a similar stimulus on the feelings, causing constant and regular muscular exertion, could take place without some consciousness, were volition necessary to the production of the effect. Indeed were that supposition admitted, it should seem as if we should be unable invariably to perform the action of respiration, consistently with that attention which is necessary to the existence of long continued trains of thought, or the accomplishment of difficult actions; and a man who was engaged in the demonstration of an obscure problem, or in putting together some complicated and minute piece of machinery, would occasionally suffer such an approach to suffocation from the suspension of respiration, as would necessarily excite sensation and the consciousness of motion.

Muscular Motion from Stimuli, and their Removal.—The removal of a stimulus produces motion in a muscle; as the application of cold: so if a substance be applied to a muscle, causing it to contract, and be suffered to remain in contact till the contraction has ceased, the removal of it will often renew the contraction. But can a substance in contact be removed without producing motion in the muscle, though slight? And in suddenly abstracting caloric, is there not also some agitation of fibres by the passage of the caloric, which is itself a substance?

This, as Bichât properly observes, "merite des "expériences ultérieures."

Motion, Convulsion, &c.—Convulsions are automatic motions of muscles; chiefly those called voluntary. We know that they are capable of being produced by mechanical and chemical irritations of certain parts of the medullary substance of the brain, of the medulla oblongata, and medulla spinalis.

The same muscles are capable of acting from the stimulus of certain sensations, ideas, or trains of thought in the mind, and therefore brain; but the effect of the mechanical or chemical stimulus is independent of thought, and cannot be controuled by it. Indeed, one would not expect this could happen, when it is considered that the relaxation of a muscle of voluntary motion is owing only to a negation of volition, or the mere cessation of those ideas which were followed by motion.

Of all the causes producing convulsion of muscles, none does it more effectually than an increased determination of blood to the brain.

According to the Brunonian System, all nervous and spasmodic affections are cases of direct debility, that is, of accumulated excitability from want of stimulus. Mere excitability, however, does not explain convulsion: for in order to produce that effect, there must be the immediate operation of a cause producing actual excitement, that is, of a stimulus. If, however, we examine the phenomena, we shall find them not at all agreeing with this theory. For we find

them very frequently brought on by all those causes which produce exhaustion, as full diet, ebriety, great and long continued bodily exertion, walking, mental agitation, and exposure to excessive heat; and they occur to the very strongest persons after these causes have been long applied, that is to say, in proportion to the degree of exhaustion.

On the other hand, they often occur without any traceable or assignable cause of excitement, while persons are going on in the calm and uniform tenor of a temperate and well-regulated life. Are we to infer that under such circumstances excitability becomes gradually so accumulated, that the common stimuli of life, that is, the usual occurrences of sensation and thought, operate as an excessive stimulus to the brain, and so produce convulsion. How then should it happen that epilepsy often comes on during sleep, in some patients never but during sleep, when the stimuli of sensation and thought are mostly or wholly wanting? It is much more reasonable to infer that in such cases the convulsion was the effect not so much of increased excitability, or capacity of being excited by common stimuli, as by the operation of some internal stimulus producing actual excitement, and consequent exhaustion, or indirect debility. This well accords with all the causes of exhaustion which I have described. It is therefore necessary that we should more particularly inquire what is that internal cause which is capable per se of producing this effect on the brain, or of cooperating with other external circumstances so as to produce that effect.

Muscular Motion of Organic Life.—It does appear to me that the organs of the internal, or organic life, suffer occasional changes very similar to those which take place in the animal life. Thus the heart, like the voluntary muscles, is evidently weakened by indolence and muscular inactivity, so that in sedentary persons bodily exercise brings on palpitation; but if it be accustomed to increased action by frequent exertion, through the medium of accelerated venous circulation, it loses this propensity to palpitation. So, also, it is less and less affected by the repetition of those mental irritations which are apt to throw it into inordinate action.

On the other hand, it is capable of being fatigued by over exertions, as after fevers, when the pulse often becomes very weak, though quick. So, also, syncope and even death from stimulating passions, or violent movements, which have first excited excessive action.

Irritability of Muscles.—An irritation is applied to a sphincter muscle, as ani. It contracts whether the patient feel it or not, as during sleep. But it is possible by the will to prevent it from contracting, though there is no antagonizing muscle by means of which to fix it by any direct exertion. It may be said that the operation of the will is only suspended. But I am only supposing the application of a stimulus; and surely not willing to act, and willing not to act, are very different things.

Irritability. In all cases it seems that irritability

does not depend on nerves; but that nerves only serve to convey to muscular parts impressions made either immediately on the brain or other sensible parts, and perhaps also some condition of irritability, as in the iris, which is abundantly supplied with nerves.

Brain.—Mr. J. Norman, and myself, examined the body of a female child, delivered at the full time, which died in the birth. Our chief attention was directed to the brain and its dependencies.

The vessels of the pia mater were apparently much fuller of blood than in the adult.

There was not the least distinction in appearance between the medullary and cortical substance, either in the cerebrum or cerebellum ; but the whole was of a similar texture, exactly uniform as to colour and other circumstances, having a pale reddish sublivid tint, resembling a testicle when cut through.

The spinal marrow was entire, without perforation, and nearly as large throughout its whole extent as in the adult. The first pair of nerves, or the olfactory, were as large as the optic.

Nothing else was observed worthy of particular notice. [Nov. 1810.]

Observations on Soemmering, in relation to the Brain.—It would be good to try the effect of the different poisons on brainless animals, as polypi, &c. from whence some notion might be formed of their modus operandi.

According to Soemmering, the smaller the propor-

tion of the brain to the nerves, the faculty of regenerating lost parts increases. Quere as to the Lobster?

It is said, by the same author, that the reaction of the brain is according to its proportionate size, and that thin men are therefore irritable, and full of alacrity; but that when they get fat, they begin to grow torpid, and that in this latter case the brain is smaller. This reasoning, however, is not conclusive. Men become torpid when fat, because exercise is more difficult from increase of weight, and circulation more easily excited, whence respiration becomes hurried. Add to this that fatness usually arises from indolence, in which disease of muscles produces torpor and deficient performance of all the functions, as circulation, secretion, equability of heat, &c., though absorption continues, and produces fulness, which, in its turn, produces torpor of body and mind. The Bakewell sheep is torpid before he becomes fat, and therefore fattens readily. Neither is it strictly correct, that infants are more irritable than adults, because in the former the proportion of the brain and nerves to other parts is greater than in the latter. Here, also, other reasons may occur. The texture itself of the brain is extremely different in the two cases.

On the question, whether the soul is confined to one particular part of the brain, Soemmering brings instances of perfect retention of faculties, under injuries of the hypophysis or pituitary gland, corpus callosum, corpora bigemina, cerebellum, corpora striata, and spinal marrow. What, however, of the medulla oblongata, if that, according to the highly

probable system of Gall and Spurzheim, is the real root of the nerves, and of the brain itself? I have certainly seen it once hard and brittle, and once absolutely schirrous; and yet the faculties, though impaired, were not wanting.

From the difference of structure between the brain and cerebellum, it is probable that they have different functions. Soemmering asserts it to be certain, that in blind persons the optic nerves and the thalami are at the same time decayed. It will be well to observe this in dissections, and in animals also, whether spontaneously blind of one or both eyes, or blinded on purpose; also, to see whether either of the nerves, thalami, or nates, is lessened in the weak eye of a person who squints. This author assigns several pretended uses for the ventricle, but controverts them all. On this subject, I have my own opinion.

Some ounces of both the cineritious and medullary part of the brain have been lost, without any apparent derangement of the bodily or mental powers. Soemmering observes, that it does not follow that many ideas may not be lost, because the patient himself in that case could not perceive it. This, however, is not probable, because a man may have formed certain conclusions, depending on a train of ideas, and he would know that the ideas had been lost, if he could no longer prove his conclusion; intermediate ideas being in a great variety of instances sunk, but recoverable on attention.

Plexus Choroides—There often appear in them

numerous small vesicles containing serous or aqueous fluid; and I have reason to believe that this is especially the case in instances of excessive extravasation of aqueous fluid into the ventricles.

Various Remarks on the Nerves.—The iris is supplied with great numbers of nervous fibrils, from the ophthalmic branch of the fifth pair, or trigemini; namely, from its nasal branch, of which a twig unites with a branch of the third pair from the ophthalmic ganglion, whence the ciliary nerves supplying the iris. Yet according to Haller, the iris is insensible to stimuli of a mechanical nature; and does not even *contract* from rays of light falling on it. It only contracts in proportion to the want of rays on the retina, and elongates, contracting the pupil, in proportion as the number of rays on the retina is increased.

Is the iris sensible of *pain*, when irritated? By the experiments quoted by Haller from Daviel, and from the testimony of Bichât, it appears to be so.

From the circumstances stated, four curious inferences seem to follow.

1st. That nerves supply parts for other purposes than those of producing sensation, or voluntary motion.

2dly. That as there is no connection whatever, by means of nerves, between the retina, or expansion of the optic nerve, and the ophthalmic branch of the fifth pair, sympathy, such as that between the retina and iris, may exist without such a connection; whence it is probable,

3dly. That the intermediation of the brain is, in this case, necessary to sympathy, &c. And,

4thly. That the great use of the nervous fibrils in the iris is to effect this sympathy.

Motions of the Iris.—In sleep the pupil is certainly contracted beyond the middle state; so, also, in old age; so in inflammatory state of the retina. It remains at least in the middle state, if not below it, in some cases of blindness, where there is paraplegia, and affections of the hands of the kind generally called paralytic, but a modification of Chorea, as in Mr. P. the muscles when used acting in jerks, and not conformably to the exact decision of the will. But in these cases there is immobility of the pupil from light. So, also, in certain states of hydrocephalus, and in some of apoplexy, where great sanguineous extravasation takes place into the ventricles.*

Ganglia.—If I am not mistaken, some author attempts to prove that the use of ganglia is to prevent the will from acting on the muscles. Now in certain animals, as, for example, the parrot, the motion of the iris is dependent on the will. Is there any ganglion in the parrot interposed between the nervous fibrils supplying the iris and the brain?

It is also asserted that the Nerves of Sensation have no ganglia. The optic nerve, whose sole function is that of sensation, has, however, constantly, in

* For contraction of the pupil from tying the par vagum, see Haller's Phys. vol. iv. p. 335.

man, and, I believe, every other animal, a ganglion before it becomes retina.

If cutting through the spine between the atlas and dentata destroys life by merely interrupting the communication between the brain and the voluntary muscles of respiration, the animal should, for a time, give some marks of internal sense, as vision, hearing, feeling in the head, and should be capable of voluntary motion of the face and other parts, of which the nerves are not cut.

Uses of Nerves.—Nerves have the power of communicating information to other parts of the system, without the production of sensation or apparent motion. This appears from the effects of irritation on parts which are not sensible or irritable, as the kidnies, &c. This is a third mode of affection, distinct from those commonly observed, sensation and motion.

The common cause acting on the nerves is that of the blood-vessels. There may be other causes. I should like to discover them; and to be able to ascertain the difference of means to be employed in these cases.

Would it not be possible, by observing different nerves that go into ganglia or plexuses, and cutting or compressing them severally above their entrance, to form a judgment, by the effect of that operation, what nerves below the ganglion or plexus correspond with that above.

Properties of the Origin of Nerves.—As the eighth pair of nerves derives one root, the accessory, from the spinal marrow, and the sixth pair, also, a root from the great sympathetic, this seems to shew a uniformity of function between the medulla oblongata and spinalis, rather than between either and the brain; and this will be farther probable, if these different origins, conspiring to one general function, serve to furnish to the nerve a more indestructible communication with the fountain head. It would be curious to see what would be the result of destroying, severally, the different origins which serve as roots.

Great Sympathetic.—It is clear that no voluntary power is derived from the great sympathetic nerve; for the muscles of the limbs lose their voluntary power by pressure on the brain, notwithstanding the union of the nerves of the brain with the sympathetic.

Different Uses of Nerves.—The passions or affections do not always act on different trunks, or even branches of nerves; but cause the same nerves to apply themselves to different uses. Nay, opposite passions act on the same part through the same nerves, producing the same action. Thus wagging the tail, which in dogs is a sign of good-nature and complacency, is an infallible mark of anger in the cat tribe.

Certain Phenomena of Sensation.—Different stimuli produce different effects on nerves. Thus effluvia acting on the olfactory nerves produce what is

called smell, which varies in quality or intensity, according to the nature and quantity of the effluvia applied. So of taste, sounds, and objects of vision; which objects, as affecting the senses, may be termed *specific* stimuli.

All these nerves have, however, a capacity of being affected by other stimuli, producing more or less of effect, similar to the general sensation excited in the skin and various other parts.

The objects of the four senses before-mentioned produce, in general, only their own specific sensations. This, however, is not always the case; for both light and sound occasionally produce actual pain, just as if the same nerves were acted upon by general mechanical stimuli. This seems to happen under two circumstances:

1st. Where the specific stimulus is considerably stronger than the person has been usually, or of late, in the habit of experiencing; and,

2dly, When the nerves of the part, or of the brain, are in a certain state of disease.

Under the first of these states the effect of specific stimuli is certainly increased. If one is long in a dark room, one sees objects of vision more distinctly. So smells, tastes, and sounds are more plainly perceived, and therefore more acutely distinguished, in a morning, when the objects have been long withdrawn. The converse of this proposition is also true; all the sensations being less acute when long excited, except in those cases in which the use of voluntary muscles necessary for the effect is rendered

more easy by use. With regard to sight, if in a sunshiny day you look long at the frame of a window, and afterwards upon the grass, you will find all the grass of a brownish hue, except certain parts exactly corresponding with the frame, and which, from those parts of the retina having had the strong rays of light intercepted, remain capable of distinguishing the vivid green.

With regard to the second of these heads, a certain circulation of blood in a part seems essential to the due nervous energy, not only of the brain, but also, probably, of the nerves themselves. Tying up the aorta descendens in a living animal has produced paralysis of the limbs; though it may, indeed, be questioned, whether this effect has not arisen from pressure on the spinal marrow from an unusual quantity of blood determined to it above that ligature.

It is probable that the sensibility of nerves to specific stimuli may be increased by a certain state of circulation in them.

Inflammation under certain circumstances increases the sensibility of parts to general stimuli; but seems to diminish it with regard to specific stimuli. An ear-ach produces deafness, a cold destroys the smell, inflammation of the eye the capacity of accurate vision.

In some cases, however, inflammation, though it destroys or impairs the effect of the specific stimulus, so changes the quality or capacity of the nerves of the part, as to make it affected by specific stimuli, as if they were general ones. Thus light produces actual pain on an inflamed retina.

A certain modification of sensibility so produced seems to confound and destroy the discriminating faculty: thus, in the tip of the finger the sense of touch, by which we distinguish various qualities of bodies, becomes almost lost amidst the increased sensibility of a whitloe.

This is a strong argument in favour of the conclusion, that the brain itself may be in a similar way so changed, that the man cannot distinguish either quality or degree, and, therefore, truth from falsehood.

That which is still more extraordinary is, that the usual effects of specific stimuli on the organs of sense are sometimes produced by general ones.

Thus, *first*, with regard to the organ of smell. I have often, when a boy, felt that a hard blow on the forehead has produced a smell similar to that of burnt smoke or charcoal; and I have frequently since had the same sensation without any blow.

Mrs. L—— had long experienced, and been greatly distressed, by a constant smell of the same kind, and which continually recurred after it had been for a short time removed by some odour or taste which overcame it. She tried various means of relief without effect. I conceived, that in this case, as in the former, the affection was the consequence of a certain state of the brain. Accordingly, blood-letting and refrigerants removed the disorder in three or four days.

Mr. P——, suffering with a constitution worn out by long gout, had for many months the same kind of smell, which he compared to the carbona-

ceous fumes of a kitchen, and which seemed constantly to intermingle itself with the taste of his food, and utterly to destroy its relish.

All these instances appear to be specific affections of the organ of smelling, in consequence of certain general causes acting on the brain.

2dly. It is scarcely to be wondered at that the organ of hearing is peculiarly liable to be affected with general stimuli, because the objects of hearing themselves seem to produce their effect by a mechanical change on a vibrating medium, which is commonly the air. Hence blows, and what are called nervous affections, but which are, probably, only certain circumstances of the impulse of the blood, will produce noises of various kinds, as rushing like the sea, roaring, ringing like bells, &c.

3dly. With regard to the organ of sight, it is well known that a sensation of light and all the prismatic colours may be produced by mechanical pressure on the eye-balls.

Other causes also applied remotely, as wind in the stomach will sometimes produce spots, musci volitantes, a dazzling or corruscation of light, and even all the gradations of prismatic colours, as in the case of Mr. S——. It should seem that this effect was through the medium of the brain.

Certain other states of the brain, totally unconnected with that of the stomach, will produce similar false impressions. In Mrs. A. C——, a lady of an advanced age, accustomed to a sedentary life and to nervous affections, white objects often appear to have

over them a shade of bright blue. To Mr. L——, evidently labouring under irritation of the brain, with slight fever, though free from delirium, for several successive days before his death, while he was even sitting up and dressed in his parlour, objects, just about sun-set, appeared of a purple colour.

Spectra, or resemblances of natural objects, in their native forms and colours, will often present themselves, as it were, to the eye, under states of health which can scarcely be called indisposition. Mr. Locke takes notice of this fact with regard to faces, and quotes an instance of a lady, who discredited their existence, but was afterwards convinced of their possibility, after having drank some strong tea. I have myself, more than once, seen the same faces which usually present themselves to one in the dark, even when the eyes are shut, and the mind, as it should seem, perfectly awake.

The same thing occurs in nervous affections without fever, as the other day in Miss M., who, as it were, convinced, for the moment only, of their reality, often unconsciously at noon-day, raised her head, in order to strike them away, but immediately recollected her error. Faces of this description, points, moving squares, zigzags, and other monstrous or annoying forms, frequently occur to persons attempting to sleep, either after the effect of opium has subsided, or in that state of excitement of the brain in fevers, which is just short of actual delirium.

Some of these examples are much more extraordinary than that of dreaming which is commonly adduced,

because the impressions exist at the very moment when the mind is not only under the influence of what is commonly called fancy or imagination, but when it is sensible that there are no real objects which excite the impression.

Such are the general phenomena of that great mover in the animal machine, the Nervous System.

By what means these phenomena have been produced, physiologists in all ages have been puzzled to explain. It is, indeed, only to a certain extent that this inquiry could go. Why sensation, or other affections of mind, or the action of mind upon muscles, should arise from the existence or organization of any matter like that which composes our corporeal frame, we feel ourselves utterly at a loss to understand, because the fact itself is singular, has nothing with which to compare it, and cannot be arranged in that order which we consider as constituting cause and effect. On this point we are obliged to confess our utter ignorance. In this inquiry, therefore, we necessarily look to the influence of some natural cause, capable of a peculiar application of common powers, or the operation of some agent whose powers were wholly confined to the production of that singular effect on parts possessing an appropriate structure. As, however, our Creator was pleased to provide for these purposes an apparatus so large, and consisting of such variety and complication of parts, it is reasonable to expect that each of those parts and forms must have its own particular capacities essential to the due performance of the several functions which appertain to

mind. This relation it is our business to investigate, and its discovery is by no means a hopeless task.*

Vision.—If a man of a certain age, who uses convex glasses, happens to have an inflammation, or what is called weakness, in his conjunctiva, and tries to read without his spectacles, he feels a great deal of pain and smarting in his eyes, which ceases when he returns to the use of his spectacles. This effect I think arises from his being obliged, for the purpose of vision, to alter the shape of the eye in the first case, in consequence of which the tender part suffers, while in the latter case the eye preserves its accustomed form.

That the eye has in health a power of changing its focus is evident, among other reasons, from this ; that when we have been long looking at a distant horizon, we cannot at first read a book ; and *vice versa.* In both cases the objects are at first confused, and it is not for some time that they become perfectly clear.

It seems to me that it is this power of changing the focus of the eyes to a sufficient degree of convexity to see objects distinctly that is lost as we become older.

A glass will rectify this last error ; but then we cannot adjust the focus of it and the eye together to different distances.

Cause of Difference in Sensibility.—That there may be a difference of sensibility in parts, *exclusively of the vascular connection,* is possible and even probable. Thus, in the same minute, parts, as the eye,

* See more under Morbid Affections of particular nerves.

become less sensible, from having been just before exposed to a vivid impression, &c. &c. The question is, however, when this is the case? and if mere sensibility increased the tendency to vascular fulness, then a part stimulated should become emptier, which is contrary to fact.

Observations on the Hair and Skin.—It seems to me that medical writers have much overlooked the different states of the Epidermis and its appendages, the Hair and Nails, during health and disease.

In reality the condition of this external covering may, perhaps, justly be considered as chiefly dependent on that of the cutis or inner skin; for the epidermis or cuticle itself is not only insensible, but, so far as observation has hitherto instructed us, unprovided with vascular organization.

We are, however, able to perceive in it an arrangement as to structure conformable to the different parts which it is destined to cover. We see, also, that it is permeable to those modifications of vapour, air, or other substances, which constitute insensible perspiration and sweat; and we have reason to believe that it admits from without the transit of certain odoriferous effluvia, as turpentine, and perhaps even portions of substances apparently more gross, as quicksilver.

We farther know that the epidermis varies as to thickness in different persons, and in the same person under different circumstances. Friction and pressure increase its thickness and strength; as we see in the hands of labouring persons comparatively with those

of the affluent and indolent. It is, also, probable that temperance, conjoined with athletic exercise, tends to produce the same effects; for it is found that training for pugilistic contests not only gives great additional agility, wind, and power of perseverance in exertion, but much increases the capacity of the skin to bear blows without being bruised or lacerated. It is probably from this cause, in addition to some difference in native constitution, that the skins of females in general are so much more tender and delicate than those of males.

The greatest effect of pressure or friction in thickening the cuticle is that which we see producing the horny coverings of flat surfaces, as the feet; and those globular indurations on cylindrical or prominent parts called corns. The brawn which is so much in request as an article of diet, is said to be a similar induration of the skin on the necks of hogs, so confined as to be obliged to be continually rubbing that part.

Several examples may be found, in authors, and specimens still exist, of an elongation of the cuticle of human beings into horns. Of this monstrosity I have seen more than one specimen. It is said that they have never occurred except to females.

This native difference in the strength of the skin seems to be accompanied with a corresponding condition of the nails and hair.

The former are evidently a prolongation of the cuticle; the latter are inserted in bulbs, which originate from the outer surface of the fat, immediately

within the cutis. These bulbs are usually supposed to supply nutrition for the growth of the respective hairs; but this opinion is controverted by Professor Blumenbach, of Göttingen, who, in his Physiology, states that the hairs projecting from the fatty tumours of the omentum and ovaria often arise immediately from the fat itself, without the intervention of any bulb; of which he was accustomed to exhibit examples at his Lectures.—*Physiology, Note on* § 190.

When the skin is thin, the nails are also thin and brittle; the hair in the same person is fine, soft, strait, and sparing; while in persons in whom the cuticle is more robust, the hair is thick, strong, and often disposed to curl.

It is usually stated by zoologists, not only that the hairy and woolly coverings of animals bear a relation to the climate in which they are indigenous, but that their coats change their qualities conformably to the variation in their habitations, and even in the temperature of the several seasons in which they are examined. Thus those animals which furnish us with furs, are generally natives of the coldest climates; and the same animal has a thicker and closer coat in the winter than in the summer.

The first position is generally, but not universally, true. Providence has undoubtedly adapted animals to the climates which they were intended to inhabit. Yet the rule is not without exceptions; for there is good reason to believe, that the first known habitation of the Merino sheep, which has the thickest and

closest coat of that whole race, was the hot climate of Laodicea in Syria.

That the second point is ascertained, I doubt. Quadrupeds usually cast their coats at certain seasons of the year; and it may be that in cold climates that season is the Spring; after which a new growth may take place, and continue till the next period of moulting. But a similar change probably occurs in regions of perpetual summer, where the supposed final cause of this change is either wanting, or scarcely adequate to the production of the effect. In Merino sheep, I have ascertained, by repeated microscopical and other observations, that no growth of additional filaments occurs in the winter, but that there is the same number of filaments through all the different seasons; that the form of each filament is that of an inverted cone, of which the apex is next the skin; that when, in the beginning of summer, the animal is shorn, the inside of the fleece is therefore the finest; but that, unfortunately for the opinion which I am discussing, the very next growth after shearing, which is immediately subsequent to the finest state of filament, is the very coarsest which occurs throughout the year.

It may, therefore, be at least doubted, whether temperature or season produces any effect on the relative number or size of hairs or wool.

I cannot with certainty determine whether I am right in an opinion, which has appeared to me founded on observation, that a due degree of thickness and firmness of the epidermis is essential to a good con-

stitution, or at least an evidence of its existence. I think I have remarked that persons, in whom it is very thin, are more subject than others to diseases of irregular determination, and more especially to scrofula.

Many of the inferior animals are furnished with muscular expansions, or musculi panniculosi, attached to the cutis, which enable them to move the skin, together with the hair, feathers, &c. with which it is furnished. It is probably, however, by an automatic and not voluntary movement, that the hair on the back of dogs, and the feathers of turkies and game-cocks are erected from the passion of anger.

In man, who, so far as appears, is unfurnished with any muscular apparatus of this nature, except in a few detached spots, the skin is nevertheless capable of certain movements, which influence the hair attached to it. Thus when cold is applied to the skin of the arms, and other limbs, or when a sense of coldness is produced on it by pain in the bowels, irritation of the rectum, and many other uneasy sensations, the skin puts on that appearance which is called goose-skin; in which we see the bulbs of the hairs grow prominent, and the hairs move and become erect.*

* The prominence and rising of the bulbs of the hair seem to arise from a shrinking of the rest of the skin. I observe that in Mrs. C.'s daughter, Lady E. L. and others, who have cold and livid hands and feet, with headachs and other nervous affections, these bulbs are habitually prominent on the arms and legs. Does this arise from a want of fulness in the vessels of the skin? or does it arise from any actual contraction in the skin itself, considered as a whole? If the latter were the case, I do not see why the bulbs would not be drawn in with the rest.

A similar effect is produced on these parts of the skin by certain mental affections, as fear and horror. He who has experienced these emotions, is well acquainted with the thrilling feel which they cause on the skin, especially of the scalp; and will scarcely think incredible the description of the effects of Fear, by the Roman poet, or that still more sublime picture of the sacred Oriental bard.*

According to traditionary report, a similar effect has occurred with regard to the beard on the upper lip, or mustachios, which are said to have curled from anger.†

The hair in infants newly born is generally of a dark colour. As they grow older, it often becomes nearly white; but in most of these examples, as age advances, it changes to different shades of brown, or even becomes black. The colour usually agrees with that of the iris. It is white in those persons who are called Albinos; in whom the iris is of a red colour, in consequence of the total want of the pigmentum.

A similar coincidence is observable in rabbits and other animals, when quite white.

The colouring matter of the hair has been recently discovered to reside in an oil, intimately mixed with its substance, but separable by certain chemical processes.

It usually happens that as persons advance in years the hair is gradually mingled with some which are perfectly white; till, at last, all the coloured hairs

* Æn ii. 779.—Job iv. 15.

† See 27th note to Lord Byron's admirable Poem, the Giaour.

are superseded by those which are colourless. This change occurs at different periods of life, sometimes begining at twenty-five or twenty-six ; while in most cases it does not commence till about forty, and, in some rare instances, scarcely takes place at all even in old age. In a black-haired female of my own family, sixty-four years old, there was but one small lock of white hair ; while in a female child of seven, whose hair was of a middle shade of brown, and very thick, there was, and has still continued, on the forepart of the head, a pretty large lock of hair perfectly white, notwithstanding no eruption, or any other disease of the skin, had ever either accidentally or spontaneously affected that part.

I do not know that any one colour of hair renders it more liable than another to undergo this change to whiteness ; which does not usually occur in the beard, or elsewhere, till long after it has affected the hair of the head.

What causes tend to accelerate or retard this change, it is difficult to say. Some persons contend, I know not with what justice, that it is promoted by the use of hair-powder, and retarded by frequently imbuing the hair with greasy substances. Exposure to sun and air certainly gives it a russet hue ; but this is very different from the whiteness or want of colour which I have been noticing.

Certain diseases of the skin will certainly produce this effect ; for on the back, sides, and knees of dark coloured horses, where the skin has been rubbed off by the saddle, the spur, or in consequence of falls,

we often see the new growth of hair perfectly white. Cold, when in an extreme degree, produces a similar effect on the hair of various quadrupeds, and the feathers of birds ; but whether by a change on those parts already existing, or by the substitution of new ones, is not, so far as I know, hitherto ascertained.

The former change may be readily admitted, if we credit various accounts given by authors, with a considerable force of attestation, of persons whose hair, in consequence of extreme fear, has become white in a very short time, and even a single night. I have myself recently attended a Lady, somewhat more than forty years of age, of a most amiable disposition, and stedfast regard to truth, who solemnly assured me that, in consequence of deep affliction for the loss of a much loved husband, her hair, which was of a dark colour, in the course of six weeks became grey, from the admixture of an equal number of white hairs, apparently of the same length as the other filaments. This, therefore, seems to have been by a change on the filament itself, when already fully formed.

The fact being once admitted that mental affections are capable of working this effect on the hairs, it must inevitably follow, that, however void of organization these appendages may appear to our senses, they must have a complicated apparatus of circulation, secretion, and excretion, somewhat similar to what is discoverable in most other parts of the living animal machine. The rule that parity of function implies parity of structure may be safely admitted with regard to the animal economy ; and we can as readily conceive a mental

emotion in ourselves to change the colour of the garments which we wear, as that it should influence that of our hairs, were they merely dead, inorganized appendages to our frame.

Of this change by internal organization it is a strong additional evidence, that we never see whiteness beginning at the root of the hair, and gradually proceeding to the other extremity; which must be the case, if the growth and constitution of hair depended on mere mechanical apposition and protrusion from the root.

Much information on this subject might be derived from an accurate investigation of that disease of the hair called Plica Polonica, in which it seems as if the vessels of that substance carried red blood. As this, however, is a disease which has never been witnessed in England, and, so far as I know, has not been scrutinized by any good pathologist, any inference from its supposed nature must be hitherto merely conjectural.

There can be little doubt that the accounts which we have received of the growth of the hair after death are altogether fabulous.

It is no weak confirmation of a circulation pervading the filaments of hair, that, when suffered to grow very long, they are apt to split at their outward extremities; and that, on the contrary, when often cut or shaved, as in the beard, they become proportionably large and strong.

Crying, *Laughing*, *Sighing*, *Yawning*, are bodily affections, often, it is true, accompanied or

excited by mental emotions, but often without them ; and with them only in so far as these emotions have the same bodily effects previously to these respective phenomena.

No one can voluntarily yawn or sneeze, to the same extent as when he does it involuntarily.

Laughter.—Laughing does not appear to be a merely mechanical action, or one which occurs from a propensity like sneezing, which seems inevitably to follow the irritation applied. For it often arises from certain impressions on the mind only, through the senses of seeing or hearing, excited by descriptions or objects which from this effect are called ridiculous. So brute animals never laugh, though a parrot or jack-daw will imitate the mere sound of laughing ; and a young infant will not laugh, when you tickle his feet. Other peculiarities of it are these ; that laughter is produced by the gentle irritation of the skin of various parts of the body, and not those only which are supplied by one nerve ; that though it may arise from ideas spontaneously occurring in a man's mind, it cannot be excited by any irritation produced by a man on his own body, or in other words a man cannot tickle himself ; that age takes away the capacity of having it thus excited ; and lastly, that a child or young person will laugh, from the mere apprehension that you are going so to affect him.

Laughter also occurs in hysteric fits ; and it is said, though I have never seen any such case, in inflammations of the diaphragm.

It consists in the contraction of certain muscles of the face, accompanied with a strong and forcible expiration, often interrupted and rendered sonorous by the sudden alternate contraction and relaxation of the arytenoid and epiglottici muscles, so as to quickly close and unclose the glottis.

Sleep produces fulness of certain vessels. Increased pain of gout and rheumatism, nervous affections, often head-ach, epilepsy, all occur on waking, from the first effort to push on the circulation.

Fatness and Leanness.—In a state of health, there is a just balance between the action of the absorbents and of the secretory and excretory vessels; so, however, as to admit of some considerable latitude. For we see that under the best health, and under circumstances of ingesta and egesta apparently similar, a person shall experience some variation as to obesity. This is still more considerable when, the ingesta being the same, and therefore the materials of absorption being not diminished, increased excretion takes place, as in sweating from exercise or any other cause, purging, lactation, or other evacuations from the sanguiferous system. From the operation of these causes, the waste being greater than the supply, an animal grows thin.

It is an evidence that fat is an excretion from over full vessels, that in morbidly increased excretions, or effusions of other kinds, as purging, hæmorrhages, sweating, dropsies, &c. there is great emaciation.

So, also, it occurs most on the internal parts in advanced age, when the system of the vena portarum may be supposed to be fullest, and when persons from that state of fulness are most subject to piles, liver complaints, &c.

Symptoms of Obesity.—Sleepiness, feeling of fulness in the stomach and bowels, occasional palpitation when at rest, violent on exercise, breathlessness, especially on motion.

Obesity in advanced life and illness is sometimes a cause of death, as in Mrs. S.

IRREGULAR DETERMINATION.

Miscellaneous Remarks.

Causes of Irregular Determination.—In irritable habits there is a disposition to irregular determinations of blood. It is true, *that these determinations must have a cause;* but the question is, whether the effects which we witness, *i. e.* the symptoms of disease, would ever exist, if there were not this intermediate and *secondary state of vascular fulness*, though a cause producing this state may really exist.

The causes of irregular determination are of two kinds; *First*, those which immediately destroy or change the balance of circulation, 1st, by diminishing the flow of blood to one part and so increasing it to another, as throwing more blood to the head by cold applied to the feet; 2dly, by weakening the propelling power of the vessels in a part, and so producing accumulations in it. And, *secondly*, those which excite increased action of the heart, and momentum of the blood, which then acts more especially on parts predisposed, producing in the brain the usual effects of increased determination, in other parts inflammation, increased discharges of blood or serum, as hæmorrhages and dropsies, sweating, &c.

Order of Facts in Irregular Determination.— Whatever may be the reason, whether it depend on any thing in the state of the blood itself, or of the vessels, or whatever law regulates the circulation, it seems certain that gout, epilepsy, and various other diseases of irregular circulation, arise not immediately from increased determination, but after that increase has subsisted some time, or, according to the Brunonian language, from indirect debility.

With this theory it seems inconsistent that coldness of the extremities, by whatever cause produced, is often followed by gout. To this, however, it may be replied, that even in this case the gout may be the consequence of the effect of excessive determination which follows that undue coldness; so that in both cases the modus operandi may be the same, the previous coldness and bloodlessness having been the cause of an immediately subsequent excessive determination.

Casual Effects of Increased Impetus of Blood.— When the action of the heart is increased in certain constitutions from any cause, as flatulency, surprise, &c. then a violent determination of blood, beyond the balance, may take place to the head, lungs, or some other part, and hysteria, mental alienation, epilepsy, asthma, &c. will follow. Many persons will tell you that, in such cases, there is a state of disease in those suffering parts, for which this increased afflux of blood was a remedy. This is scarcely probable, unless it could be shewn that the heart itself was called into action expressly for the purpose of relieving that

part; and this cannot be where the disease is in one part, as the alimentary canal, from flatulency, to relieve which the heart beats more violently than usual; and secondarily, brings on disease of the head, as headach, apoplexy, mental alienation, &c. So in Mrs. C. Feb. 1811, within fourteen days after parturition, who had had some considerable tendency to affection of the head before parturition.

The Difference of States of Inflammation arises partly from the texture, and partly from unknown circumstances, as gout, cancer, common phlegmon, &c. All the different states have, nevertheless, a common circumstance, as increased momentum or determination, which is modified by these different circumstances of constitution from difference of age, &c. as in various diseases of the head and other parts; and may arise from one common set of exciting or remote causes, each attack partaking of the local or general constitution.

The *gravitation* of the blood towards a part has some share in increasing the symptoms connected with fulness, and therefore inflammation which is an effect of it, or, at least, comprehends it as an essential part. The gout in the feet is always worse after the feet have long been down, and is diminished by the horizontal posture. In Mrs. A. C. the pain of a violent inflammation of the eye, which was easy while she was sitting up, was for ten successive days violently aggravated immediately on lying down.

So also in the case of erysipelas, which generally

descends, inflammation has a relation to the gravitation of blood in the vessels.

Inflammation is not always shewn by a *hard pulse.* Mr. G. had slight synocha, with pains in various muscles, a soft pulse, not much exceeding 78 in a minute, a white tongue, night exacerbation of pain, a pink sediment in high-coloured water, and inflamed and cupped blood. *Pain* is not a constant symptom of inflammation, as in that of the liver, lungs, &c. It has been absent in several cases, as in Mr. P. with fever and highly inflamed blood, &c. &c.

Whether what is called *inflammation of the blood,* is itself a cause of a tendency to disease, or is the effect and indication of such a cause existing in the constitution, is no matter.

Proximate Cause of Inflammation.—With regard to the proximate cause there may be considerable doubt. The first phenomena of inflammation are, I believe always, increased momentum, that is, increased velocity with the same quantity, increased velocity with increased quantity, equal velocity with increased quantity, or, lastly, diminished velocity with increased quantity; but as local inflammation often takes place without increased action of the heart, it should seem, that, in such cases, the two last states only can exist, unless we suppose a fact which has never been proved, that certain arteries, more remote than the part evidently affected with excessive fulness, act as a heart with regard to that part. Under these last circumstances, therefore, one is induced to conclude, that

there must be some state of the vessels of the part, which may give occasion to the increased local fulness that constitutes the increased momentum. If, then, this state of the vessels act as the cause of the topical increased momentum, it must necessarily be more remote than the momentum itself, and therefore cannot be considered as the proximate cause.

On the other hand, the increased momentum itself of the arterial blood seems often to precede that yielding state of certain capillary vessels, which admits of their being affected with the excessive fulness that characterises inflammation. Here then, as in the former case, the increased momentum in the capillaries is subsequent to the state of them which admits, and therefore is nearer or more proximate to the inflammation. This increased momentum in the capillaries is not always a disease, except in certain degrees. The error lies in confounding the increase of momentum in the arteries with that in the capillaries, a subject which requires more consideration.

Perhaps, in strictness, one might admit of two proximate causes, one being that which exists in the series of excitement, to which the term is usually assigned; and the other being a part of the predisposition, or relating to the state of the part to be acted on.

The disease, whatever it may be, is the compound effect of the state of the part, and of the occasional cause acting on it; the former constituting what is more usually considered as the cause of predisposition, and the latter that of excitement.

If, then, the increased momentum depends on a certain degree of velocity with unusual dilatation, as this state constitutes the beginning of inflammation, that momentum seems to merit the appellation of proximate cause.

The point is, however, of little importance, if, as I have before remarked, it is a necessary link in the chain, without which inflammation cannot subsist.

From all which has been said, it is highly probable, first, that in a state of local inflammation there is a morbid determination of blood to the capillary vessels of the part affected, which consists in an increased momentum in those vessels which carried blood in the healthy state, or in the intromission of blood where they were previously void of it; but, secondly, that in a more advanced stage of the disease, a slower circulation and a diminished impetus, or even a total stagnation, of that fluid may ensue; and, thirdly, that then will follow the various effects already specified, chiefly intended either for the cure or renovation of the affected part.

What it is that especially determines either of these several effects of inflammation has not hitherto been discovered.

In either case (see Elements, §. 322) of topical disorders, it seems reasonable to assign the name of proximate cause to the increased momentum of blood, for the *weakness* or other disposition in the capillaries to admit an undue influx of red blood must be *prior* to the influx itself, and therefore the influx must be nearer to that degree of affection which constitutes

the malady, than the previous condition of the part itself.

Where there is diminished tonicity, if the impetus be proportionably diminished, no disease follows. But be the above admitted or not, as the capillaries, so far as we are able to judge of them, in this stage of such diseases, are merely passive, while the excessive sanguineous determination is the appearance which is first cognizable by our senses as an active power, it seems most reasonable to give our chief attention to this phenomenon, as that by which we are chiefly enabled to regulate our practice. [1814.]

On the State of the Vessels in various states of Hæmorrhage; of Irregular Determination, &c.— According to Bichât, on various occasions the blood flows to a part in unusual quantity, in consequence of an increase of what he calls organic sensibility. This, according to him, is that action by which the circulation is continued on through the capillaries, after it has lost, or nearly lost, the vis à tergo from the heart, which, he says, is insufficient to explain the circulation.

He says that the increased sensibility (in the common acceptation of the word) is not the effect of more blood in the part, but the cause of it; for pain, as he asserts, often precedes the appearance of redness and inflammation; and if the finger is cut, the blood does not immediately flow in increased quantity to the part.

But, first, I doubt the fact: for neither in the eye

nor skin is any part preternaturally tender without symptoms of increased fulness; and if that fulness were not visible externally, there would be no proof that it was not so internally, and in the deeper vessels, which would experience pain by superficial pressure. This often happens in gout, with every mark of increased fulness, as stiffness or pain on motion, without any external redness whatever. Where a slight wound takes place, the extremities of the wounded vessels are probably pressed together by the impulse of the instrument producing the wound.

The itching and burning, which Bichât speaks of as proofs of the increased sensibility giving occasion to fulness of capillaries, and hæmorrhage from exhalants, I should say were not the cause, but the effect, of that increased fulness and impetus.

So if a part be rubbed, &c. it is certain that it becomes fuller of blood, and its animal sensibility is increased; but it does not thence follow that the sensibility was first increased, and the fulness followed. The *sensation* indeed was; but not the *sensibility*, or *capacity* of sensation. This is Bichât's error.

If the afflux of blood to a part, in consequence of wounding it, be the effect of increased organic sensibility, and not the cause of the state called inflammation, in which there is increased vitality, how happens it that taking blood from the part should diminish the afflux, and in proportion the symptoms of increased vitality, as preternatural animal sensibility, &c.? For if diminishing the quantity of blood in a part diminishes the vitality, why should not

increasing the quantity increase the vitality, and that to such a degree as to produce the disease in question?

Nothing, therefore, is gained as to the ultimate question, by admitting increased vitality to be the proximate cause of inflammation, if the afflux of blood to the part be previous.

Here again Bichât confounds a *power* with an *action* or *affection:* for let us suppose that extraordinary dilatation of vessels be the cause of an increased afflux of blood to a part, and that this is a vital action, the excitement or production of that dilatation is no evidence of an increased power; it only proves that the power is called into extraordinary exertion, in consequence of which the *effect* is extraordinarily great.

Mere dilatation, however, does not essentially and necessarily produce inflammation; for it occurs in other diseases without inflammation.

It is certainly unnecessary to suppose previous increased sensibility, in order to explain the afflux of blood constituting inflammation. Take a young female in sound health, and let the first joint of her finger be stung with a wasp. Immediately a sensation of exquisite pain is produced. In ten minutes, not only the whole finger, but, in some instances, the back of the hand shall be red, hot, and swelled.

Cause of the Stagnation of Blood.—With regard to the cause of the stagnation of blood in the capillaries during the advanced stages of inflammation, it is begging the question to assume that this state is owing to the inactivity of those vessels, except

so far as respects their incapacity of propelling the blood which is superfluous. The question is, first, how that extraordinary accumulation took place? Let this be supposed to be an unnatural and excessive yielding of the minute vesssels. Secondly, why, nevertheless, does not the blood go on? Is it that the vis à tergo is insufficient to propel it? That may be, notwithstanding the vis is greater than is natural, because there is a greater weight to be moved. May it not however rather, or also, be because, in consequence of the accumulation, the capillaries beyond being either not enlarged in proportion, or being, perhaps, even contracted unusually, the blood itself may undergo a change somewhat approaching to coagulation; as Haller, in his microscopical experiments, saw clots form, though afterwards they were resolved. This shews that experiments should be directed as well to the course of the vessels beyond, as to those immediately affected with inflammation.

Order of Symptoms in Inflammation through the Brain.—Quere, whether, when, as in Mrs. M. in whom, from scarifying the œdematous foot, great inflammation and spreading mortification with great pain took place, but without any other affection of the brain than the sensation of the part, and no increase of action in the heart, or any change in the tongue, skin, or urine, the inflammation could be considered as taking place through the medium of the brain, or rather through the vis insita of the part.

In many cases of paralysis of hands following

colic from lead, there is often no acknowledged intermediate uneasiness of head.

Disposition to Inflammation.—That there is a greater general disposition to inflammation at one period than another is evident from these circumstances, that in some seasons swellings and suppurations occur to a great number of persons from bleeding, and to others from leeches; while at other seasons, under similar complaints, the same effects do not attend such causes.

Long Predisposition without apparent Disease.—In Mr. C., nearly seventy years of age, a blow was received on the outside of the left leg. The part appeared pale, but there was for many months no pain or other inconvenience in it. At length it became dead, and a large slough took place in it.

Evidence that Inflammation and Sweating are similar States.—I have constantly observed, that during periods when, from warm clothing or other circumstances, the feet perspire, then gout has been apt to come on, though in hot weather. On the other hand, when the feet have been dry, though comfortably warm, even in cold weather, patients have not been subject to gout. I *think* woollen next the skin increases both.

In Mr. B. (a young Russian) when sweating most in feet, rheumatic pains were then the greatest.

Theory of Agues, &c.—There seems to be one analogous and common operation in all cases in which, after previous coldness, there is preternatural heat. These cases are agues, synocha, typhus, phlegmasiæ, exanthemata, nervous affections.

They all imply some *defect* of blood in one or more parts, and consequently *excess* in one or more others; and it is probable that the defect producing, or produced by, excess about the heart or brain, may be the exciting cause of the increased action which follows by the stimulus of that excess.

If a boil or pimple occurs on the skin of the arm, it may be supposed that the inflamed part consists of vessels unduly distended, in consequence of an insufficient degree of contractility to carry on the circulation. This state produces also some delay in the course of the arteries immediately before; but that distention only going to a moderate extent, stimulates those arteries to preternatural contraction sufficient to overcome the resistance in the diseased part, and to produce either resolution, extravasation, ulceration, or gangrene; according to their several degrees of adaptation to the state of the inflamed part. In this way the cure of local inflammation is carried on by the neighbouring vessels, without appearing to call the constitution into action.

This process explains the spreading of inflammation by the action of neighbouring arteries, where they are not sufficiently vigorous to overcome the distention of the part primarily inflamed, but by the very exertion run themselves into the same state of incontractility.

It is probable that the very same states occur with regard to the constitution itself, when it is called on to act in order to overcome more extensive congestions of blood.

May not the different degrees of power in this respect constitute the difference of the genera of fevers; as synocha and typhus, &c. ?

When it is considered, first, that agues occur at the same seasons, and in the same situations as what are called bilious remittents, distinguished from them by a very slight shade of difference, and as bowel complaints and choleras ; secondly, that the liver is peculiarly subject to be affected by long continuance of agues, and that agues are often cured by calomel and other purgatives, without bark, which in such cases seems to produce other violent affections, especially of the head (even when it cures); it seems to follow that the cause of agues, if there is one uniform cause, is fulness of the abdominal vessels, including those of the vena portarum. In such cases, therefore, the effort is to remove that fulness by a hot fit, which is succeeded by sweating, which terminates the paroxysm, but probably does not effectually remove the congestion. Hence, especially if the patient remains under the influence of the same causes of congestion, there is a repetition of ineffectual paroxysms according to other laws.

So far as I have seen, though my experience in this respect is very defective, the head begins to be affected in agues after the cold fit is abating, and the hot fit is just beginning.

This proves that the impulse first begins in the vessels of the head, from whence it afterwards extends to the viscera and extremities, diffusing heat as it proceeds.

Salutary Effect of Fevers.—In agues, &c. the fit appears evidently salutary; and even after other fevers, people before thin and ailing, become fat and strong.

It is very clear that a fit of ague is an effort of nature to restore circulation, or to get rid of superfluous blood in a part. We see a similar process in various cases in which preternatural coldness has been induced. Nay we see pretty regular intermittents, as tertians or quartans arise from diseased viscera, as lungs, &c. The shivering occurs sometimes at regular periods, and is followed by heat and a certain degree of sweating, without perfect apyrexia, though the sweating for a time carries off the aggravation or exacerbation. The regular return shews the disposition to observe periods, even when the cause is not pro tempore removed.

Shivering in old persons is often extremely violent, but sometimes not followed by any, or by little feverish heat. It is in them not so indicatory of febrile affection, and therefore not so alarming as in young persons. It is in all sometimes produced by the circumstances giving occasion to pain; and then often not followed by fever, but called nervous. When it is most violent, as in agues, cæteris paribus,

the fever is most acute, and the shortest; while in typhus, in which there is only slight coldness and rigor, the fever is longer, and not so certainly critical.

Fatal Tertian Ague.—Dr. C. aged upwards of 60, contracted in Lincolnshire an ague of the pure Tertian type, for which he tried, in vain, all the remedies that could be suggested by his medical brethren in the metropolis and elsewhere. Among other medicines, he had taken arsenic so as to produce paralysis of the four extremities. At length he came under my care at Bath.

I also employed every method which I could devise, or learn from others, but altogether without success. As long as the best bark remained on his stomach in substance, the disorder ceased; but at the end of three or four days, he always vomited up, not only the bark itself, but all the food of every kind which he took during its use. He was therefore obliged to discontinue it; and in a few hours the paroxysm returned as before. Thus, at the end of two years, he died.

On examination of his body, the integuments of the thorax and abdomen had on them at least three-quarters of an inch of fat.

The mesentery was very much thickened, and the omentum contracted, moderately fat, and adhering to various parts. The mesentery and peritonæal coat of the small intestines and of the parietes of the abdomen, were thickly studied with small scirrhous glands. The liver was sound, but strongly adhering

on its anterior and superior part to the peritonæum. That portion of the peritonæum which covered the colon was free from disease. The spleen was in a natural state, as were the intestines and stomach. The latter contained in it about a pint of brown glairy fluid, similar to what was usually rejected by vomiting. In the abdomen, there was nearly a quart of serous fluid.

In the lungs, there were a few tubercles, not in a state of inflammatiou. In the thorax, a pint of fluid. The heart was very fat; and all its valves, together with the coronaries, and adjacent large vessels, free from ossification and all other disease. [Jan. 17 1802.

Typhus, Scarlatina, &c.—A very large proportion, I think I may say full four-fifths, of the cases of Typhus which I have visited among the better classes of people, have been either in lone houses in elevated situations, or, if in towns, in the most airy outskirts. The latter also has been in a still larger proportion true with regard to Scarlatina. I cannot help therefore thinking that some state of the air, as its weight or temperature, must have a considerable share in producing these diseases.

In the Typhus or Synochus, if the heat about the head diminishes, and at the same time the disposition to hurry, agitation, and delirium, with a pulse not increasing and within 100 in a minute, though at the same time there be a great defect of memory, and deafness, and even an increase of debility, if that is not excessive, it is a proof of a state of quiescence,

or a diminution of the cause of disease; as for example in Mr. O. S.

Connection of Local Diseases with Fever.—When fever comes on, accompanying local affections, it is not easy to describe whether they are symptoms or causes. They may be efforts to relieve the apparent local disease, or the cause of it, or they may be to relieve some non apparent disorder, and produce local diseases in other parts.

Beneficial Effects of late Bleeding in Fever.—In Master C. aged nine, on the sixteenth day of a continued fever, with little preternatural heat of skin, a pulse between 120 and 136, and constant pain on the left side of the head, followed by delirium, subsultus tendinum, with speechlessness and almost constant stupor, the stools procured by calomel and salts were like colourless jelly much diluted, and the pupils contracted irregularly and unequally on the admission of light. Under these deplorable circumstances, which existed in spite of very active previous measures of depletion, eight ounces of blood were taken in the evening from the left temporal artery; and as after this operation the child was evidently less delirious, and the pupils contracted equally and readily, the pulse remaining sufficiently full, the same quantity of blood was taken from the same artery the next morning. At the same time twelve grains of rhubarb were given.

And now two phenomena occurred, from which I

entertained considerable hopes of a favourable event. The serum of the blood last taken had somewhat of that milky appearance which is observed to take place in that of blood drawn during tolerable health soon after a meal: and as this appearance is generally supposed to arise from an admixture of newly formed chyle, its existence in the present instance was an indication of healthy absorption, and consequently of an interruption of the destructive processes of fever. In the afternoon there was also, for the first time for many days, a fæculent and consistent stool, of a dark brown colour, which was a further evidence of a proper action of the alimentary canal, and of a healthy performance of the hepatic function.

From this period, recovery, though slow, proceded pretty uniformly. On the twenty-sixth day, his pulse was 84 and full: he was extremely fretful and peevish, knew every one, but sometimes passed his urine and stools under him, and though able to put out his tongue and swallow well, was either unable or unwilling to speak. That evening, for the first time, his urine deposited a lateritious sediment, and his tongue was moist and perfectly free from fur.

No wine or any other cordial was given through the course of this disease; which was treated first by emetics, and afterwards by leeches, the application of cold water to the head, blistering, purging, occasional antimonials, digitalis, and effervescing citrate of potash. Previously to the bleeding from the temporal artery, the mouth was for a short time affected by the

mercurials, and a cough which was troublesome but short, occurred at an advanced period of the disease.

Hectic relieved by Hydropic Effusions,—Mrs. F. aged thirty, after long and violent pain above the pubes, without any sensible swelling, began to discharge purulent matter with her stools. This state continued for many weeks, with constant hectic fever, night sweats, and emaciation .Her pulse was usually from 120 to 136 in a minute. In the course of the complaint, the glands under the skin in various parts of the body swelled, inflamed, but gradually subsided without coming to suppuration. With all these circstances there was frequent vertigo, and occasional delirium. By degrees a fluctuating swelling began to appear in the abdomen, and as this increased, the pulse came down to 96, and the heat and night sweats were proportionally diminished. After some time, the hydropic extravasation began to extend itself to the cellular membrane, first of the lower extremities, and on the 22d and 23d of February, of the hands. At the same time, from an increase of shortness of breath, it was not improbable that the cavity of the thorax had suffered some degree of serous effusion. Immediately the pulse again began to diminish in frequency, the night sweats entirely disappeared, and the vertigo and delirium in a great measure ceased. On the 22d of February, at 2 P. M. the pulse was 72 and irregular, and the respiration 40. At 9½ P. M. pulse 60, respiration 40. On the 23d, in the morning, pulse 54, full and regular; respiration 40, and some-

what less oppressed. In the evening, pulse 60, and rarely irregular; respiration as before.

This change in the pulse could not have arisen from the operation of any remedy; for she took no digitalis, and squills had been for many days omitted. The discharge of purulent matter continued as before from half an ounce to an ounce every three or four days.

Now, however, another conspicuous and notable change of circumstances occurred. The œdematous swelling of the hands began to abate; and on the 24th, in the morning, the pulse was 72, and irregular, and the respiration 36. On the 25th, the œdema still decreasing, and the breath being somewhat better, with considerable dry cough, the night having been restless from pains in various parts, and the urine small in quantity, high-coloured, and with a copious farinaceous sediment, the pulse rose to 104. On the 26th, it was in the same state. The swellings still continued decreasing, and with them the powers of life till the 4th of March; when, the former being nearly gone, the pulse 90, and the respiration 52, she soon afterwards expired. [1809.]

Partial Heat and Cold.—In many cases of *hectic fever*, and even of hæmorrhage, with a pulse but little quicker than natural, as in Mrs. B., at 92 or even 82, there shall be red patches with increased heat on the arms, cheeks, and other parts, which patches shall be hot, while parts near shall be pale and cold.

Dropsy is often an effect of hectic fever, and is perhaps one modification of it.

Exanthemata.—Whatever may be the exciting cause, the effect, in measles, small-pox, chicken-pox, scarlatina, &c. is a great determination to the skin, either where it is covered with cuticle, or only epithelion ; accompanied with a corresponding febrile action in the whole arterial system, and often ending with suppuration or discharges on the surface ; killing by indirect debility, more especially of the brain ; often ending in determination to other parts, as anasarca, ascites, inflammation of the joints, bloody or coffee-coloured urine, glandular inflammation. The nature of the specific contagion is not understood.

Pemphigus, I have three or four times seen sporadic in hot weather. It seems to be exactly similar to the effect of a *blister* on the skin, or *burn*. A great general heat takes place, accompanied with more or less of head-ach, thirst, white tongue, sweating, and prostration of strength. Bladders rise over different parts of the skin, prominent, and full of colourless or yellowish serum from the elevation of the cuticle. Some of them extend to nearly an inch in diameter. By degrees they disappear, and the symptoms subside, without having appeared dangerous.

The Miliaria, a red efflorescence, with serous extravasation between the two skins. It may happen at any time from increased circulation on the surface,

whether spontaneous or from external heat. Generally accompanied by sweating,—an effect of the same increased impetus,—sense of heat, pricking, smarting, and itching, like a blister, which is the same effect from external stimulus; only the vesication is larger. What is the difference between the Red and White Miliary Rash?

Miliaria appears to arise from the same cause as sporadic pemphigus, viz. from external heat, either of weather, accompanied with sweating, or of cloathing, particularly flannel. I have never seen but one case in which it arose without the contact of flannel. It exists in all fevers in which there is much disposition to sweating, as those of puerperal women, and acute rheumatism; but is almost lost now that the hot treatment of fever is so much laid aside.

The *Aphthæ* in infants, I am well persuaded, is usually the effect of the action of sucking on the cutis and cuticle of the tongue, lips, and fauces, from which it extends, as in all affections of membranes, beyond the part touched.

Erysipelas.—A febrile state of inflammation of the cutis, in which it is for a considerable space greatly thickened and red, and pours out more or less of a fluid on the surface or underneath the cuticle. Sometimes mortification follows, from the excessive stimulus of the part. When in the face, accompanied with great determination to the brain, quick incoherent talking, violent agitation, restlessness, and other incessant tremors, as in inflammation of the brain;

removed by cold water externally applied, in the case of S. upholsterer.

Small bladders of the same kind, accompanied with an intolerable sense of burning, with red bases or blotches constituting erythema, or one species of erysipelas, often appear in clusters on different parts of the body, sometimes with, but often without, fever, and last an irregular time.

I am from various observations persuaded of the propriety of cold applications, externally, to the skin of the face and head, when affected with acute erysipelas. The application which I employed, with immediate relief from the most violent burning pain, was one part common spirit of hartshorn to three of cold water, on rags several times doubled, and constantly renewed on the part.

Heat seems to have the same effect on anasarca, erysipelas, and other disorders of increased arterial determination. I have seen the first evidently very much increased in a dropsical female in the leg only which was next the fire; and the erysipelas aggravated, when the patient was convalescent, on the cheek only that was so exposed.

Erysipelas cured by Cold.—Mr. S. an upholsterer, aged thirty-four, who had lived intemperately, was on the 3d of December, 1805, seized with a giddiness in his head, attended with some swelling and redness of his nose. These extended themselves on the following day, with great heat, all over his face, and on the 5th produced total blindness. He

ceased to have sleep, and on the 7th, became delirious. A blister was applied, and in this state I was called to visit him on the 9th.

His pulse was rather weak, and upwards of 130 in a minute. His feet and hands were often very cold, but his face was then hot, though not very red, and there was no matter under the cuticle. He was perfectly incoherent, answering questions quickly and irrationally, constantly talking and picking the bed clothes, frequently attempting to get out of bed, and his hands affected with violent tremors.

An opening draught was ordered, and five leeches were directed to be applied to his temples.

At half-past nine, P. M. the pulse was weaker, and all other symptoms were aggravated. I left the room with no hope that he would be alive the next morning. But it having occurred to me to try the effects of the application of cold to the head, I ordered that half an ounce of finely powdered Muriate of Ammonia should be suddenly dissolved in a quart of the coldest water, and cloths dipped in it to be folded round the head; the application to be repeated every four or five minutes, and a new solution to be made once in two hours.

Dec. 10, A. M. Pulse 116. Head cooler, and night much more quiet. He had borne the application well, and had much less of delirium and tremor.

Eight, P. M. Pulse 96. The application had been very assiduously continued for hours together, and the tremblings of his hands, and other symptoms, were evidently lessened.

Dec. 11. Pulse 96. The application had been continued every quarter of an hour during the night; and he had had in the morning an hour and a half's sleep, the first which had occurred for an entire week. Two motions.

Dec. 12. Pulse 84. The water was applied from ten at night till four in the morning. Very little delirium, and no tremor.

Dec. 13. Pulse 72. No delirium or tremors; but for several hours he had been affected with severe cough.

Dec. 14. Pulse 72. Night good; face of the natural size, and, together with the head, scaling all over. He was sitting up, free from complaint, in a room adjoining his bedroom, with no consciousness of having suffered any malady.

Affections of the Skin.—In the erythema, or chronic erysipelas, (shingles,) there is a great degree of pain or soreness on pressure or motion in the side to a considerable extent beyond the part where the eruption is visible. The skin, therefore, is affected beyond that part, and there is often deep pain in these cases before eruption or redness.

I think it also probable, that the skin is the seat of disorder in various complaints that are usually called muscular. In nervous women we often observe obstinate and troublesome pains about the sides under the breasts, accompanied with more or less of tenderness on pressure, and indisposing them to lie on the affected side, though without marks of fever or inflam-

mation. Often in coughs, the sides and belly are very sore; so are all parts of the body after uncommon exertions of the muscles; the calves of the legs and other parts in cramps. In the case of nervous women before mentioned, the pain seems to be accompanied with even cramp or contraction of the muscles. Now it appears to me that these are chiefly affections of the skin, which we know is a very tender part, while the muscles are much less sensible, and which is so connected with the muscles by cellular membranes and blood-vessels, that it is easily affected by all preternatural motions of the muscles themselves.

The readiness with which affections of deep-seated parts are communicated to the skin appears in gout, in which the skin is usually very much inflamed, and in the eruptions which often appear on rheumatic limbs, giving the appellation of scorbutic rheumatism.

That *eruptions on the skin* are cases of irregular vascular determination, is evident from Miss F. having always some red spots on the face and neck after her epileptic fits when strong; and from the case of Miss L. to-day, Sept. 25th, 1807, who had a violent epileptic fit yesterday, immediately on which a miliary rash came out, consisting of an infinite number of extremely minute pimples scarcely larger than the point of a pin, red, and raised above the skin, so thick as to give the skin of the face and neck an appearance of general redness, though the spaces between were of the natural colour. It is singular that these pimples came out on the face and neck only where they were

uncovered, terminating in an edge precisely defined by the extent of the handkerchief on the neck.

Scarlatina.—Nothing can afford stronger evidence that dropsy is owing to increased momentum than what often, nay usually, occurs in Scarlatina. This disorder at Bath, even with the weakest persons, just arrived from London, as in Mr. N., is evidently a disorder of high inflammation, in which the pulse is usually extremely rapid, and the skin violently heated. When the symptoms have subsided, and the pulse has returned to its natural state, various affections follow, either singly, or in succession. These are painful swellings of the joints, which are tender to the touch; swellings, and frequently suppurations, of the parotid, submaxillary, and other conglobate glands; coughs; renewed swellings and soreness of the uvula and tonsils; all of which maladies are evidently of the inflammatory kind, and are accompanied with a renewal of fever, attendant on each local affection. Other symptoms are, urine either of different shades of coffee, or of florid redness, from an admixture of blood, which, in the latter case at least, is certainly arterial. This hæmorrhagic state is without doubt always of what is called the active kind.

To these sequelæ may be added hydropic effusions, which are attended with fever, and, when in the limbs, are generally if not always preceded by the state of acute rheumatism already described.

All these states are relieved by blood-letting; and in all, inclusively of the ascites following scarlatina,

blood drawn from the arm exhibits a concave, and generally a puckered, crust of coagulated lymph, as in other inflammatory maladies.

In Mr. N. on the 23d day from the commencement of the scarlatina, after various complete absences of fever, and when there was no disorder but some slight hæmorrhage from the kidnies, there suddenly came on a violent pain in the head, followed by epileptic fits, each of which terminated in a strong spasmodic affection of the diaphragm, by the pressure of which any contents of the stomach were thrown up.

Cases.—In the month of February, 1814, I attended a family of whom four children had in succession scarlatina, accompanied with inflammation, and incrustations about the throat. Previously to their seizure, a maid-servant constantly with them had a sore throat without eruption, and did not recover till after some of the children were taken ill. Eight days after my first visit to the child first seized, their mother, who never forsook them, had a smart attack of sore throat and fever, without any efflorescence. Two days afterwards a Lady of middle age, paternal aunt of the children, whom she constantly nursed, was seized with acute fever, violent headach and pain in her limbs, and great inflammation all round the soft palate, tonsils, and uvula. In the course of the complaint the pulse reached nearly 130 in a minute, delirium occurred, the throat suffered rather deep sloughs, and the hands and arms were for twenty four hours of a damask red colour, though with-

out elevation above the skin, intervals of the natural hue, or subsequent efflorescence. Blood taken from the arm was covered with a very thick crust of concave coagulated lymph, having under it a strong crassamentum. This lady had experienced a most violent attack of scarlatina with ulcerated sore throat upwards of twelve years before.

While she was lying ill under my care, her brother, living in the same house, the master of the family, experienced a slight attack of sore throat and fever without scarlatina.

Mr. J. N. aged 10½, whose sister, somewhat older than himself, laboured, in the month of November 1813, under scarlatina with ulceration in the throat, was seized with the same complaint about the 7th of December. The throat was severely affected, and suffered either ulceration or exsudation; but the scarlet rash, though very generally spread over his whole frame, was not very florid, and was chiefly in small distinct spots. In the month of February, 1814, about the latter end of the month, the young Lady had another attack of the same disease, both in the throat and on the skin, in every respect much more severe than the former. On the 23d of March, Mr. J. N., who had a constant or occasional intercourse with his sister, was again seized with headach, acute fever, inflammation about the uvula and tonsils, followed by inflammatory exsudation. The pulse reached 144 in a minute; and on the 24th of March, the whole body and limbs were covered with a uniform damask rose discolouration, not raised above

the skin, and with no appearance whatever of intervals. This discolouration continued for five or six days. About the 5th of April, the pulse returned to its natural state, and the redness had entirely subsided. On the 8th, there was some pain in the limbs, with return of fever, uneasiness about the right kidney and ureter, great deficiency of urine, which was of a coffee colour, whiteness of tongue, and renewal of loss of appetite. At this time the desquamation of the cuticle began, and the skin was very dry. During the next fortnight various other changes, such as usually follow true scarlatina, successively occurred, so as clearly to mark the nature of the disease. These were, pains in various joints, and about the thorax, soreness and swelling of the parotid and submaxillary glands, and a mixture of florid or dark blood with the urine, each accompanied with temporary fever. This last appearance varied in degree for many days, till the 24th of April, when it had nearly disappeared, and the patient was in other respects free from complaint.

On the following morning, however, at 5 o'clock, he was suddenly seized with epileptic fits, as above described.

Period of Infection in Scarlatina.—A female servant was very ill with a scarlet fever, and left her place six weeks ago last Sunday. She slept on the same story with J. F. who, while she was ill, had giddiness and pain in the head, but no sore throat, or any certain fever or sickness in the stomach. He was quite well till about a fortnight after, when he

had again pain in the head, with loss of appetite, and some fever. This second illness lasted a week, without sore throat, or scarlet rash. He was seized on the 14th with scarlatina, beginning with ulcerated sore throat, and was cured chiefly by an emetic. There was no communication between him and the female, except that the housemaid attended him and the latter for three days at the beginning of his illness, and made his bed. [Dec. 25, 1804.]

Jan. 26th, 1806. In Sir W. C. scarlatina began Friday night, eighteen days and a half after he had any communication with his cousin Master B. (Jan. 6.) They were, however, in the same house.

State of Throat not essential to Death in Scarlatina.—Mr. C., three in whose family had scarlatina, died of it within the 4th day, with red eyes, and all the marks of diseased brain, but with only slight redness in his throat, and no ulceration, or difficulty of swallowing. Others in his family had great affection of the throat, with the scarlet rash.

Scarlatina from Cynanche Tonsillaris.—Miss W., aged about 20, was seized in the morning with rigor, followed by very quick pulse, languor, and headach, and attended by great swelling and slight redness of the tonsils, with little soreness, and without the least ulceration or inflammatory exsudation. The next morning, her hands were covered with a red rash. She had no cough, sneezing, inflammation of the eyes, or eruption of any other part.

Measles.—Oct. 15, 1808. Miss A. æt. two years seven months, was exposed to the infection of the measles in a child who began to have the eruption on Tuesday se'nnight, (3d,) and on the following day Miss A. was removed from the house. She began to have some fever on the evening of the 10th, and the first symptoms of catarrh on that of the 11th. This day (15th) she had some redness about the eyebrows about 2 or 3 P. M., and various patches and small spots about the face. She was slightly wandering this morning. Pulse 136, and full.

Oct. 16th, 1 P. M. Pulse 140, and full. Eruption now over her face, of a florid rose red, in patches, with different parts of irregular shades, unequal edge slightly raised above the skin. Still some rambling. Considerable cough. Similar eruption on breast and back. Arms pale. Four motions. Heavy and drowsy.—Pulv. Jacobi, gr. j. 6^{tis}.

Oct. 17. Eruption florid in face, and now appears in florid red small irregular spots on the arms, hands, and feet.

Oct. 18. Face nearly of natural colour. Skin moist. Tongue furred. Cough less and looser. In good spirits, free from delirium.

Period of Infection in Measles.—A little girl had the eruption of the measles on a Wednesday: on the Sunday se'nnight following, a little boy who was with her; and in the following day, a little girl.

August 19, 1813. Mrs. B. P. had the measles three years ago, and a fortnight after they were over,

a full month from the time of her sickening, was brought to bed, at the full time, of a daughter. This child on the 12th of the present month began to have the measles, her brother having sickened on the 29th of July, and her sister on the 9th of this month.

Eruptions are always more vivid as the action of the heart increases, in measles, scarlatina, &c.; a proof of the power of increased action of the heart. [1815.]

In the *small-pox*, &c. when fatal consequences are about to ensue, the redness and swelling subside. Why? From a diminution of the action of the heart, as in fainting. So in common eruptions from sickness. In fact, therefore, the patient does not die, because the eruption subsides; but the eruption subsides, because he is dying. [Aug. 30, 1808.]

Scrofula.—Is there not something in common between the state of the skin, and that of the glands, disposing to *scrofula?* In consumption the skin of the tongue and of the bowels suffers, producing aphthæ and diarrhœa.

In *itching of the skin*, those who would obtain the greatest relief should abstain from food, drink, and heat.

Phlegmonic Fever.—March 7, 1813. E. S. aged 35, an unmarried servant, was suddenly seized, in the night of the 20th of February, with shivering followed by fever; for a week previously to which she had had a purging, accompanied with violent pain in her back and loins, but neither sickness nor inappetency. At

the time when the fever commenced she was perfectly recovered from the bowel complaint, but with the fever had violent pains in her legs and arms down to her fingers' ends, with great headach and some soreness of the throat, and coughing. These symptoms were soon followed by great sweating, and she has ever since been confined to her bed. On the 3d ult. she began to have soreness and redness about the knees, and on the following day on her elbows and arms; which have ever since continued. The complaint appears to be an inflammatory state of the skin, consisting of large phlegmonic blotches, much swelled, very red, and so sore as not to admit of being touched without the most exquisite pain. This state reaches, in irregular patches, and boils of various shapes and sizes, up the outside of the fore-arms, to the elbow, and all along on each side of the tibiæ to the knees, round which it extends, but beyond which it does not go. There is a similar appearance on each cheek; and every where there is a more prominent point, from which the swelling, &c. are diffused irregularly to different distances. The back of the right hand is swelled, and œdematous; her head aches, and she has no appetite. The cough also continues. Last week she menstruated in a natural manner. Tongue furred. Pulse 108, and hard. Skin hot. Her bowels have been copiously opened by purgatives. Urine high-coloured. Mitt^{r}. sanguis è brachio ad ℥x.

March 8. The blood is covered with a moderately thick concave and corrugated crust of coagulable

lymph, and the crassamentum is scarcely diffusible by shaking it with the serum. She had six motions yesterday; but has had none to-day. Pulse 108, and soft. Urine high-coloured, and with a copious lateritious sediment. The pain in all the phlegmons is very much increased by the warmth of the bed; and a new one has appeared in the right instep, and another on the same ankle. None of them have the least tendency to suppuration or exsudation. On the whole, the pain is less than it was. Other circumstances nearly as before.

℞ Potassæ Carbonatis ʒijss.
Sacchari puriss: ʒij.
Scillæ recentis, gr. xxiv. Contritis adde aquæ fontanæ ʒvj. Sum. coch^{l}. duo ampla cum succi limonis coch. amplo uno inter effervescentiam, quartâ quâque horâ.

Let all her drink be taken cold.

March 9. No motion since yesterday. Night rather better. Pains in the lower extremities considerably abated; but she has had great pain in the left hand, which is red and swelled, but not œdematous. Tongue white. Skin much more cool. Pulse 98, and strong. The whole medicine has been taken. Urine without sediment, and more copious; but still high-coloured. Mitt^{r}. sanguis ad ʒx. She was directed to take three drachms of Epsom salts on the following morning, and to continue the mixture.

March 10. Crassamentum in each cup is firm, and with a concave wrinkled crust of tenacious lymph. No motion. The pains are much lessened, and there

is no appearance of inflammation, except in the wrists and back of the hands, which are much swelled and œdematous. Cough frequent, with thick mucous expectoration. Urine somewhat paler. Pulse 108, and hard, but less full.

Cras primo manè sumat Infusi Sennæ ℥iss.

Pergat in usu Misturæ.

Let her be constantly out of bed.

March 11. She had a very good night, with scarcely any pain except in the inside of her right hand, which is red and swelled. The inflammation is gone from the wrists and backs of the hands, which however are still somewhat swelled, and œdematous, exactly as in gout. Cough much less frequent, and expectoration free. Tongue nearly clean. Pulse 96, and soft. Four copious motions. Urine as yesterday.—Pergat.

March 14. One motion yesterday, and three to-day, from the aperient. Nights tolerably good. The pain is now wholly confined to the left wrist and hand, and her ankles; the former of which is œdematous, and each puts on the appearance of gouty inflammation. Cough nearly gone. Pulse 100, and rather hard. Nights tolerably good. Urine high coloured, and without sediment.

Pergat in usu Misturæ.

March 16. No motion yesterday; two to-day from the aperient. The skin of the wrists and backs of the hands is desquamating; and some slight œdema, though without pain, continues in the left wrist. The ankles are still painful and tender to the

touch, without any œdema. Pulse 96, and soft. Cough nearly gone. Tongue somewhat furred. Appetite improved. Urine high coloured, and without adequate sediment.

Vesperi immittantur pedes in balneum tepidum per horæ quadrantem.

Pergat in cæteris.

March 18. Bowels open thrice to-day. No motion yesterday. Nights good. Cough gone. The pediluvium on the 16th produced great pain in her feet, but none last night. There still remains some inequality all down the tibiæ to the feet, with redness of the skin, and considerable soreness on pressure, with some degree of œdema. Hands well, and still desquamating. Tongue clean. Urine of natural colour. Pulse 84, and soft.

Desistat ab usu Misturæ.

Rep^{r}. Pediluvium.

Perendie primo manè sumat haustum aperientem.

March 20. The swellings are entirely gone; and all compliants are removed.

Changes produced by Fever, &c. on the Skin, Nails, and Hair.—The local and general effects, on the skin, of topical and general inflammation, have not been sufficiently noted, and, perhaps, not generally or accurately observed.

It is not to be wondered at, that even after the subsidence of erysipelas in a particular part, the scarf skin of that part, exclusively of the first desquamation, should again entirely come off. It will

even occasionally do so two or three successive times; and that, sometimes, in scales or flakes, the size and thickness of which are proportioned to the natural thickness of the skin of the respective parts.

It is, however, more extraordinary that in this case, only probably where there has been general fever, a similar desquamation extends itself to parts the most distant from the topical inflammation. Thus in erysipelas in the face, the horny skin of the feet, together with corns there and on the fingers, together with warts on various parts of the body, will be completely separated and thrown off; the new cuticle will be perfectly soft and smooth, and will not again suffer a new thickening or induration, till even a considerable time after pressure or friction, the usual causes of those effects, have been again applied.

During an attack of erysipelas of the face, I lost a wart on the first joint of my right little finger, which was continually growing so as to split, and require frequent paring down; but which has never since returned. The same effects are, I believe, often at least, produced during inflammatory fevers, in which there is no perceptible disease of the cutis itself.

It may, however, be considered as apposite to this condition of the epidermis, that the outward skin of the tongue in such maladies often undergoes a similar change, and is in different modes separated and thrown off from the subjacent cutis. It is this change produced on the cuticle that constitutes what is called the fur on the tongue, so frequently occurring in fevers; which usually disappears first at the

tip and edges, and gradually to the centre and back part, but which sometimes also separates in scales or flakes, leaving the skin underneath in different degrees of smoothness, redness, and other circumstances of health.

Whether the same general cutaneous desquamation, so common in inflammatory fevers, attends those of a typhoid kind, I have omitted to observe; but it is certain that the desquamation of the tongue, to which I have before adverted, is peculiarly conspicuous in fevers of the latter class.

I have often had occasion to observe, in myself, a similar separation of various parts of the cuticle on the hands and feet, after those parts had been severally affected with gouty inflammation.

From the several febrile affections before mentioned, various changes, little noticed by authors, have occurred with regard to the Hair and Nails.

During a deficiency of cutaneous circulation, which is often not incompatible with a certain degree of present health, not only the skin is dry, and, as it were, thin and scaly, but the nails become thin, extenuated, brittle, and corrugated. After gout in the hands or feet, the nails of the part respectively affected undergo a considerable change, becoming thick, strong, and smoother and less wrinkled. Whether a similar change is produced by general fever, I have not observed.

With the desquamation of the cuticle, the hair of the head, and on various parts of the skin, is apt wholly or in part to fall off. As however the skin is renewed,

a fresh crop of Hair also arises, and is usually such as to strength, thickness, and colour, as, in patients advanced in years, to give an appearance of a much earlier age. Thus when, after an erysipelatous fever, which I suffered at the age of fifty-five, the skin of my face, and various other parts, repeatedly came off, and with it almost all my hair, which was extremely thin and grey; after some months, a new growth covered my head, thicker, and with a much greater proportion of dark hair than before. Mr. G. at a more advanced age, had for several months a fever, in which I saw, first the membranes, then the ligamentous parts, and afterwards the glands, affected with inflammation. He recovered, and the hair of his head, which had been dark, but had become much more grey than mine, was renewed in increased abundance, and without a single white hair.

From partial inflammations an opposite local effect is often produced on the hairs scattered on the skin. In the spring of 1811, I had for some weeks violent gout in my right wrist, for which, though it was accompanied with considerable fever, I did not abstract myself from my usual professional avocations. Soon after the inflammation had subsided, a great number of long black hairs appeared on the skin of the back of the hand and wrist; but after some months gradually disappeared, leaving the skin in the usual state.

In the winter of 1813 and 1814, after an attack of gout in my left wrist, a similar new growth of hair

occurred on the outside of the wrist and lower part of the fore-arm.

Among the effects produced by fever on the Nails and Hair, I must not omit to mention that change to crookedness so often observable in the former from hectic fever; or that disposition to the growth of a beard on the upper lip, which occurs in young females in the advanced stages of that malady. For the latter information I am primarily indebted to the late Mr. Barry, of the Hotwells, Bristol, whose experience in hectical cases was very extensive, and who, so far as I know, was the first person who observed the fact, and considered it as characteristic of the malady.

Thickening, Induration and perhaps Scirrhus, of the Skin, and perhaps Cellular Membrane.— Mrs. W. aged upwards of fifty, was affected with considerable pain and inflammation of the skin of both legs, from which oozed out large quantities of aqueous fluid. On recovering from this inflammation, the skin of the legs and feet was much distended, free from soreness or pain, but resisting pressure like a piece of board.

I have seen many other instances of the same kind without any apparent previous inflammation of the part itself, though with great swelling, as in the late Lady S.; and I think it probable, that an extravasation of coagulable lymph not only produces this effect, but also thickens and hardens parts in the neighbourhood of inflammation, probably through the cells of the cellular membrane.

Cuticle affected by Absorbed Bile.—Mr. L. was for many months affected with some disorder of the liver, and gall-stones, which brought on some degree of jaundice, and left on the skin a tawny hue, as if of deep sun-burn. This affected the face, the whole body, and extremities. Late in the autumn of 1810 he came to Bath, drank the waters, and bathed, employing at the same time suitable opening medicines. These means restored him to comfortable health, and he regained his flesh and strength. About a week after he left Bath, which was in the month of February, 1811, the skin of his body and limbs in general by degrees began to resume its natural colour. That of the hands and fingers, however, began to be mottled with irregular spots of the natural hue, which gradually extended themselves, while the rest of the hand remained of a deep yellowish brown. These white spots still continue to take place of the discoloured skin on the back of the hands, without the least appearance of desquamation; and the only parts which now remain discoloured are the whole face and upper part of the neck, and part of the back of the hands and fingers. All other parts of the skin are of the natural fairness.

Dropsy not from increased action of Exhalants.—If dropsy were the effect of the increased action of exhalants, analogy would lead us to infer that the more the vessels were tired, the less they would act; and, therefore, that extravasation would become relatively less, as the disease advanced. The con-

trary, however, is the fact, as appears from the increased necessity of tapping at shorter periods.

Dropsy and *Hæmorrhage* rarely concur; but when they do, both are capable, as in Captain A. of being relieved by diminishing the action of the heart.

Hæmorrhage is more usually a constitutional affection than inflammation, or than dropsy.*

A proof of the coincidence of acute rheumatism with dropsy is, that many persons, who have had the former disease, die many years after of the latter.

[1815.]

The Hæmorrhagic and Dropsical State both owing to undue Determination.—The hæmorrhagic and dropsical state being usually the same, it is not to be wondered at that the latter should occur to persons subject to the former.

When, however, dropsy follows large natural hæmorrhages, it does not accompany them, but supervenes when they have ceased. Hence it appears to be a collateral effect of the constitutional state, or a kind of vicarious discharge, rather than the consequences of the preceding hæmorrhage. On the contrary, it is probable that hæmorrhage, by removing excessive fulness of vessels, often prevents dropsy.

* The subjects of dropsy and hæmorrhage are introduced here, in connection with inflammation, to illustrate the general principle, and the relation of these states to increased momentum and irregular determination. For particular examples, see hectic, scarlatina, hydrocephalus, hydrothorax, ascites, &c. in their respective places.—Ed.

If this be true, we may naturally expect that the converse may sometimes happen, and that hæmorrhage supervening to dropsy may also cure it.*

When dropsy is associated with large artificial hæmorrhages, I observe that, as in the case of hæmorrhages which are spontaneous, it does not usually accompany them, but comes on after they have ceased; and I have concluded that it is the effect of nutriment absorbed too suddenly for the relative state of the vessels, which therefore strive, if I may be allowed the expression, to get rid of it by every possible outlet. This principle is well illustrated by the following case. Mr. H. at the middle period of life, of great and just professional reputation in this city, and about a year before confined for many months to his bed with acute general gout, was attended by Mr. G. Norman and myself, for a violent inflammation in one eye, accompanied with great pain and fever, and threatening the speedy loss of that organ. In the space of four days, twenty-five ounces of blood were taken from the temporal artery on the same side, and seventy-five ounces from the arm, many leeches were applied to the temple, and the vessels of the conjunctiva were frequently scarified. From these powerful means, aided by purging, nauseating doses of ipecacuanha, and iced water almost constantly applied to the forehead and crown of the head, the disease in a few days disappeared; but suffered a relapse, in consequence of his leaving his bedroom too suddenly, and taking a meal of animal

* See hereafter the cases of Mrs. Gen. M'C. and Mr. P.

food. It was, however, once more removed by another blood-letting to the amount of twenty-four ounces. Shortly afterwards he returned to his professional pursuits, and for three days dined only on chicken. His legs now began to be affected with œdematous swelling; and as it was considered that this affection was owing to too sudden a resumption of full diet, he left off animal food, and purged himself; in consequence of which, at the end of three days more, the œdema vanished, and he now, after an interval of many months, continues to enjoy a degree of health and strength, to which for several years before he had been a stranger.

Evidence of Dropsy being a Salutary Effort.— In Mrs. F., aged thirty, the pulse, under a state of hectic of long continuance, from suppuration somewhere in the pelvis or abdomen, discharging continually by stool, being from at least 120 to 136 in a minute, came down to 96, with diminution of heat, and disappearance of night sweatings, in proportion as she began to be affected with ascites. In her, during the course of the complaint, the glands under the skin in various parts had become affected with swelling and inflammation, which, however, by degrees subsided many weeks before this hydropic appearance; a mark of disposition in increased circulation to produce successive irregular determination. The constitution was thus relieved, by evacuation, from increased impetus.

So in liver complaints, peritoneal inflammation,

pleuritic inflammation, &c., the effusion relieves symptoms, which would probably end in suppuration or ulceration, and thus prove sooner fatal.

The œdematous swellings in gout, rheumatism, toothach, &c. are of the same salutary nature.

It will be seen, from consulting the daily reports of Mrs. F., that afterwards, that is from Feb. 19th, as œdema began, and very much increased in the legs and thighs, and on the 22d, and 23d, began even to affect the hands, and from the shortness of breath, extravasation probably began also to take place in the chest, the pulse became still gradually slower. This was not from Digitalis, of which she took none; nor probably from Squills, of which, also, none had been taken for some days; nor from extravasation in the brain, delirium which had sometimes, and vertigo which had frequently, occurred, having at the same time nearly ceased. But it must have been from mere extravasation taking off vascular irritability. At the same time, for the three nights preceding that of the 23d, the sweats of the hectic kind, which had long existed, but had diminished as the pulse became slower, now entirely ceased. The discharge of matter continued much as before, that is from half an ounce to ʒj once in 3 or 4 days; and the urine seldom amounted to three-quarters of a pint or a pint in 24 hours, and always high coloured and with a copious farinaceous sediment. [Jan. 1809.]

Dropsy, a curative Process.—When Lord G. came to Bath, in the month of May 1808, he was

in his 67th year. His talents and intrepidity as a naval officer are sufficiently known; but it is not equally known that on all trying occasions his anxiety to acquit himself of his duty to his country and his own breast were absolutely destructive of his happiness and repose. Much of this anxiety he felt in London, when about to take the command of the Channel fleet in June 1807; and then he began to experience some shortness of breathing on any considerable muscular exertion.

On his arrival at Bath, Sept. 25, he was labouring under difficult and hurried respiration, so that not only walking, but even speaking, was uneasy to him. He was obliged to lie with his head and shoulders raised, and could not sleep on either side, but had no cough. His urine did not amount to three-quarters of a pint in 24 hours, was of a darker colour than porter, and had a copious sediment. His ankles were not swelled; he had no pain or fulness in the region of the liver, or any other part of the abdomen, and no yellowness or discolouration of the skin. His pulse was 84 in a minute, and his respiration 32. His tongue was rather dry, but not furred. He was much emaciated, and had an almost total loss of appetite. He had been treated with purgatives and chalybeates.

The remedies now ordered were a grain of Quicksilver rubbed down with Manna, and the same quantity of dried Squill, twice a day, and twice or thrice a day an effervescing draught of Citrate of Potash, with fifteen drops of Mr. Tickell's Preparation of Ether. In three or four days the urine increased

to three pints in the twenty-four hours, and Lord G.'s health was greatly mended.

The pulse being now of the natural standard, and the appetite continuing bad, Lord G. was desirous of drinking the Bath Water, from which, on a former occasion, he had derived considerable benefit. The Cross Bath Water was given at first once and then twice a day, in the quantity of only four ounces at each dose, and the other remedies were to a certain extent continued. In a very few days the pulse began to quicken, the urine to decrease, and the breathing to become more laborious, and that without any improvement of the appetite.

The Bath Water was now omitted, and the medicines were given in the full dose as before. The urine was again soon restored, the breath amended, and the pulse reduced nearly to its natural state.

With this diminution of the morbid symptoms returned an eager desire of drinking the Bath Water, with the view of improving the appetite and strength. It was permitted; but with a still worse effect than before. Fever, paucity of urine, dyspnœa, were again in a few days excited; and a cough was superadded, accompanied at length with a spitting of blood, which threatened immediate suffocation. Squills and the effervescing draughts were substituted for the Bath Water; and again with the effect of removing the fever and pulmonic affections, and of restoring the urine to its natural quantity and colour. All thoughts of any further use of the Bath Waters being now relinquished,

Lord G. continued occasionally to take his diuretic medicines, and to regulate the alvine evacuations.

After some weeks, passed nearly in the same state, with a proper quantity of clear urine, the stools were observed to be too pale, and some œdematous swelling began in the feet, and gradually ascended, first to the knees, and then to the scrotum. The mercurial course was now renewed, with no other obvious effect than that of keeping the bowels more regularly open.

At this time, notwithstanding, he was daily taking six grains of dried Squill, Lord G. began to relish his food better than at any former period; soon after which, his belly began to swell, and, in about a fortnight, evidently fluctuated on the usual examination.

As the swelling of the abdomen increased, that of the lower extremities somewhat diminished; and the appetite at the same time appeared to mend, the sleep and facility of breathing improved, and the urine remained in its natural state.

In this situation Lord G. continued for several weeks, with little increase of weakness or of emaciation. During this period mercurial ointment, in small quantities, was every day, for about a month, well rubbed into the abdomen, so as at length to occasion slight soreness of the mouth; after which, as it produced no sensible effect on the swelling, it was discontinued.

Under these circumstances Lord G. employed various remedies till the middle of December; when, the urine being more deficient, the combination of Quicksilver with Squill, and the effervescing draught

with Ether, were once more tried, but did not seem to increase the quantity of urine.

About this time, not having visited Lord G. for several days, I was greatly surprised, on repeating my visit on the 21st of December, that, notwithstanding there had been no unusual evacuation of any kind, the belly was much diminished in size, and no longer fluctuated to the touch. He was, however, labouring under more fever, with very restless nights, which made it necessary to give him fifteen drops of Laudanum at the hour of sleep. This succeeded in quieting him; and his pulse became slower. The Laudanum was continued to the amount of twenty-five drops, with the medicines last described; and these remedies so acted on the kidnies, that on the 25th of December he made nearly a gallon of clear well coloured urine, which afterwards varied from two to one quart in the day.

A considerable degree of drowsiness now came on, but without mental alienation.

On the 27th of December, the pulse was 96, and the respiration 32.

At half-past 1, P. M. on the 31st of December, his pulse was 80, regular and soft, his respiration 32, and he seemed to be quietly asleep. This state continued till he died, without a struggle, at half-past 8, in the evening.

Cure of Dropsy.—I have long considered the operation of remedies in curing dropsies, as influencing and removing their cause, whatever that may be;

more especially disordered action of the heart or arterial system.

Of this state, deficiency of urine is a usual, but not constant effect; for I have seen at least ten cases, at various ages, from fifteen to sixty, of dropsy, chiefly anasarca ending in hydrothorax, in which the quantity of urine has spontaneously been from the beginning, till two or three days before death, fully equal to that which was natural, as for example, from two to four pints daily, clear, and even sometimes pale, and yet the patients have all died. Nay, I have never seen a patient recover under these circumstances of a natural state of urine.

On the other hand, I have known many examples of patients labouring under dropsy of different kinds, with defective and high coloured urine, who have perfectly recovered, all the effused water having been absorbed; and yet the remedies producing the cure did no more than just restore the urine to its healthy quantity and colour.

The connection of deficient urine is, therefore, only an effect, and by no means a cause.

Case of Bleeding in Dropsy.—About the year 1784, I attended a young man, who had peritonæal inflammation with stoppage in the bowels, which were with difficulty relieved, and were immediately followed by ascites. The fever continuing, I caused him to be la rgely blooded from the arm, and ordered him saline and opening medicines. The fever soon ceased, and the ascites disappeared, with little aid from the remedies usually exhibited as diuretics.

Some years afterwards I was called to visit a noted horse dealer, between fifty and sixty years of age, who was a great drinker of spirits, and laboured under diseased liver, with ascites, anasarca, a quick pulse, and an extreme paucity of urine, very high coloured, and depositing a copious lateritious sediment. A great variety of remedies having been tried without effect, I had eight or ten ounces of blood taken from the arm. It exhibited a very thick and tenacious crust of coagulated lymph. Without the aid of any other remedy, the pulse was reduced in frequency; and the urine during the next twenty-four hours was quadrupled in quantity, and became clear and proportionably pale. At this period another Physician being consulted, to whom blood-letting in these complaints appeared a most dangerous practice, I was not disposed to urge its repetition in a case, which, though it had suffered some temporary remission, was much too far advanced to admit of a cure from that or any other remedy.

Bleeding in Anasarca, &c.—Col. G. O., a short, rather corpulent man, between fifty and sixty years of age, who had been a free liver, and subject to frequent fits of the gout, became my patient in consequence of great œdematous swellings in his legs, paucity of urine, and total loss of appetite, for which, as they were supposed to be connected with a gouty diathesis, he was sent to Bath for the use of the Waters. At my first visit I found him labouring under these symptoms, to which were added a sense

of great heaviness in his head, a flushing of his face, disturbed sleep, an occasional stertorous inspiration while he was awake, depressed spirits, a very dry tongue, and full, strong, and a rather quick pulse.

At this time, Aug. 1790, I was young in my profession, but not altogether unobservant of the facts which presented themselves to me, and as it had happened to me to see more than one case extremely similar to that which I have described, in which the patient either had afterwards epilepsy, or was relieved by copious hæmorrhage from the nose, I ventured to predict that one or other of these events would occur to Col. O., unless they were prevented by a timely artificial evacuation of blood.

It will readily be conceived what impression this proposition, at that period of medical knowledge, made on the minds of the patient and his friends. What! bleed a man at an advanced period of life, of a gouty habit, in such a state of debility, actually labouring under dropsy, and who clearly wanted blood, rather than suffered from a superfluity of it? Never surely was there so wild and extravagant a proposition!

Notwithstanding these objections, I persevered, and was fortunate enough to gain my point. Ten ounces of blood were taken away by cupping. The patient felt immediate relief of all the more important symptoms. The weight in his head and stertorous inspiration were removed, the tongue became less dry, the pulse softer and slower, he had that night many hours of comfortable and refreshing sleep, and waked with some appetite.

But though the remedy was considerably beneficial, it was insufficient for the purposes of the constitution, for on the following day he was seized with a spontaneous bleeding at the nose, which was very copious, and in a few days no symptom of indisposition remained.

Bleeding in Anasarca, &c.—Captain B., aged about forty, a stout and rather corpulent man, had been for many years subject to gouty attacks of a very inflammatory kind; but having escaped them for several months, began to be affected with œdema of the feet and legs, accompanied with quick and strong pulse and great difficulty of breathing. This gentleman also consulted me, in consequence of having been sent from home for the purpose of drinking the Bath Waters.

When I saw him on the 6th of December 1799, his legs and thighs were swollen to an enormous size; his pulse was extremely full and regular, and 120 in a minute; and his breath was so laborious, that he had not even attempted to go to bed for forty successive nights, and was obliged to keep himself in a perfectly erect posture in an easy chair, without being able to recline in any direction. His urine was very small in quantity, of a deep red colour, and depositing a copious lateritious sediment.

Instead of giving Mr. B. the Bath Water, or any other stimulant, I ordered ten or twelve ounces of blood to be taken away by cupping, and a grain of Digitalis to be administered twice a day, with pretty

large doses of a solution of Potash, given with lemon juice during effervescence.

By this process he was enabled on the very first night to repose in a somewhat recumbent posture in his arm chair, and had some comfortable sleep.

The next day his pulse was at 104, his urine much increased, and his breathing so much improved, that he was able to go to bed, and obtained much refreshing repose.

The remedies were continued, with another cupping. The urine remained in a state of clearness and habitual increase, and the anasarcous swellings and dyspnœa proportionally diminished; so that after three or four days he slept without any interruption in a perfectly horizontal posture. The state of reduction in his pulse was as follows: On the 8th of December, the pulse was 104; on the 9th, 100; on the 10th, 92; on the 11th, 90; on the 12th, 92; on the 13th, 92; on the 14th, 88; on the 15th, 85; on the 19th, 80; on the 4th of January, 72.

Soon after this, without the use of any other remedies, Captain B. had a smart fit of inflammatory gout in the extremities, and left Bath in good health and spirits.

Mr. C. Crook attended this gentleman with me.

Dropsy cured by Hæmorrhage.—Mrs. Gen. M., aged forty-eight, had the measles very severely in the month of March 1808, followed by vomiting and an eruption of another kind on the skin, which continued for a fortnight. Before this eruption disap-

peared, there came on very large anasarcous swellings, which occupied the whole of the limbs and face, giving the entire skin the usual appearance of confirmed leucophlegmasia. The urine was at the same time natural as to quantity and colour. The eruption now went away, but the swellings continued in a most alarming degree till the 9th of August, when her head violently aching, she was seized with a bleeding at the nose, which continued for two or three days, during which she lost upwards of a quart of thin and very pale blood. The discharge was accompanied with a quick and weak pulse. The anasarcous swellings immediately disappeared.

When, however, the hæmorrhage had ceased, the pain and throbbing in her head increased, accompanied, at times, with violent startings when she was about to sleep; and, while she was awake, with frequent and sudden cramps in her hands and other parts, which affected the former with very painful contractions, and then as suddenly went off. The pulse was about 100 in a minute, and the carotid arteries, in their diastole, greatly stretched, and hard like a piece of catgut.

Some weeks after, Mrs. M. was seized with epileptic fits, of which she died in twenty-four hours.

Dropsy cured by Spontaneous Hæmorrhage.—Mr. P., aged between fifty and sixty, master of a tavern in the neighbourhood of the Royal Exchange, London, had been a considerable time indisposed with shortness of breath and dry cough, for which,

being recommended change of air, he came to Bath, and consulted me. I recommended him such remedies as appeared to me suited to the removal of incipient hydrothorax; by which, it seems, he was in a short time restored to health.

Several months after his return to London, he was attacked with similar symptoms, accompanied with œdematous swellings of his lower limbs, which by degrees to reached the abdomen. Having found no relief from the remedies which had been recommended to him, he determined once more to visit Bath.

When I saw him, he was scarcely able to walk or lie down in bed; his legs, thighs, and abdomen, were much swelled from anasarca, and an evident fluctuation in the latter shewed that fluid was contained in its cavity. His urine was very high coloured, and small in quantity.

I ordered him to take a grain of quicksilver rubbed down with manna, twice a day, and dried squills in as great doses as his stomach would bear. Of the quills, he took at first six grains daily, and was fortunately able in a few days to increase the dose to sixteen without sickness. Mercurial ointment was also rubbed on the abdomen every evening.

From these measures great benefit was soon derived. In about three days the urinary secretion began to increase, and in two more became very large. The swellings abated; and at the end of somewhat more than a fortnight, no disorder remained but weakness.

This happened in the month of August 1804. The following relation of a subsequent occurrence with regard to the same patient has been communicated to me by Mr. Cruttwell, Surgeon.

At the beginning of the year 1805, Mr. P., who had been anasarcous for a long time, was suddenly alarmed by a bleeding from the scrotum. He resided at Hampstead, so that I did not reach him till some hours after the appearance of the hæmorrhage: I found him pale and faint; and the bleeding had ceased. The attendants computed that he had lost a gallon of blood; as a great quantity had flowed upon the bed, and had been received in cloths. More than three pints had been caught in a large chamber pot, and preserved unmixed for my inspection. It had separated into crassamentum and serum; and the proportion of the latter seemed more abundant than is common. Mr. P. was of course much weakened by this accident: but he recovered his strength very rapidly. His dropsical symptoms were very decidedly relieved, and he was restored to a greater degree of health than he had experienced for many years.

Anasarca cured by Bleeding (chiefly.)—April 18th, 1809, Mr. T., aged sixty, a very fat man, has for many years worked hard, and afterwards, at night, generally eat and drank very freely. For some years past he has had a difficulty of breathing, which has prevented his lying down in frosty weather, and has been subject to coughs, often attended with copious spitting of blood. Ever since Christmas last the

dyspnœa has increased, with an utter inability to breathe in an horizontal posture. He has, also, been subject to great drowsiness and giddiness.

Five years ago, soon after the healing up of an old ulcer in his leg, these complaints commenced, notwithstanding the opening of an issue in his knee. A week ago a seton was inserted in his neck.

Yesterday about three o'clock in the afternoon, while in bed, he was seized with a peculiarly violent attack of difficulty of breathing. His face, hands, and thighs, are now very œdematous, in consequence of which his limbs are so stiff that he can scarcely walk. His urine is in very small quantity, high coloured, and turbid. Pulse 88, full and strong. Right eye considerably inflamed.

Mitt^{r}. Sanguis è Brachio ad ℥ix.

Sextâ quâque horâ sumat Haustum è Potassâ effervescentem, cum Scillæ recentis gr. iv. Tincturæ Digitalis guttis xv.

April 19th. The crassamentum is firm, difficultly diffusible in the serum, and covered with a strong crust of coagulated lymph, which is concave, and twice the thickness of a crown-piece. The serum is somewhat milky, and of natural proportion. Immediately after the operation his breathing was greatly relieved, and he had a tolerably good night. He has made full three pints of urine, of a good colour and clear. Eye much better. Swellings greatly decreased. Pulse 78 and soft.—Pergat.

April 20th. He has had two motions in the night, and two to-day. Cough and breathing a great deal

better, though some difficulty still remains. Urine two pints. Swellings entirely gone. Pulse 96, and soft.—Mitt^{r}. sanguis ad ℥viii. Persistat in usu Haustuum.

April 21. The crassamentum in all three cups is very tough and indiffusible, and the serum is somewhat milky. One cup has no crust of coagulated lymph, but the two others are covered with a thick coat as before, Three motions, and two pints of urine, since last report. He has to-day complained of some sickness. Tongue tolerably clean. Eye nearly well. He has no where any vestige of swelling; and the waistband of his breeches admits of being taken in five inches since the day of my first visit. He coughs much more strongly and deeply than he did; and his breath is so much improved, that he can now lie down on a single pillow. He feels himself much lighter, and in all respects better. Pulse 78, and full.—Sumat Haustum ter die tantum.

April 22. He was yesterday very sick from the medicine. Two motions. Breathing as well as it has been at the best for several years past. Urine two pints, and natural in colour. Pulse 88, and full.

Let him take only two-thirds of his draught thrice a day.

April 24. Urine three pints daily. Bowels open. Skin cool. Tongue clean. Pulse 72, and soft. He sleeps well, has no swellings, and his breath is much better than usual, with scarcely any cough.

Let him abstain from spirits, and take no fermented liquors but small beer.

Dropsy removed by Bleeding.—Miss L. aged about twenty, caught cold by walking in the snow in the month of November, or December, 1810; subsequently to which time she became subject to affections of the head and limbs, which after some time terminated in paleness of the skin, and anasarca of the limbs, and even face. The catamenia continued to flow regularly and well. In April 1811, after headach, which continued for a week, she was seized with an epileptic fit, which for a while deprived her of her senses, and was followed by another in the course of the same day. She was blooded copiously from her arm, and from the temporal artery. The crassamentum was small in proportion to the serum, but firm, and covered with a thick crust of coagulated lymph of the cup-like form. Immediately after these bleedings the anasarca began to lessen, and in two days entirely disappeared.

She was gradually relieved from the affection of the head; but at the end of a week, the swellings returned in some of the limbs, and with them came on sleepiness, which in two days ended in carus, and twenty-four hours afterwards in death.

Good effects of Blood-Letting in Dropsy.—Major General S., aged between fifty and sixty, an officer of cavalry, who, during the campaign in Portugal in the autumn of 1811, laboured under a violent fever, came to Bath in the beginning of the year 1812, under some suspicion that the complaints which then affected him originated in gout.

These complaints were a very irregular and intermittent pulse, with great dyspnœa; both extremely increased by the least muscular exercise, and the latter making it difficult for him to lie down, and obliging him often to start up out of his sleep in order to prevent suffocation. His urine was deficient in quantity, his bowels were costive, his stools of a dark colour, his stomach disposed to flatulency, and his legs œdematous up to the knees.

Under these circumstances I had him freely purged, gave him squills with digitalis, and occasionally calomel, and, in conformity with his own wish, permitted him a very small quantity of the weakest Bath Water.

These means, continued for two or three weeks, relieved the difficulty of breathing, increased the quantity of water, improved the stools and appetite, and made the pulse perfectly regular.

Still, however, great difficulty of breathing on motion continued; and the starting up in the sleep, and the swelling of the legs, were in no degree abated. The pulse at the same time, though regular, became quick, and extremely strong, full, and hard. The tongue was also dry, and the urine continued defective in quantity. This was his state at the end of a fortnight.

I now recommended that the Bath Water should be discontinued. Blood was taken from the back, by cupping, to the amount of ten ounces, and he was desired to persevere in the use of the other remedies. Wine and other cordials were wholly interdicted.

Immediately after the bleeding, he was much more

light and free from feelings of indisposition than he had before been. His pulse was much softened; and the starting up in his sleep from a sense of suffocation was nearly removed. The urine increased, and the œdema of the legs suffered a proportionable diminution. The appetite was good, and the tongue became clean.

In about three weeks he had little complaint; but the pulse being still too hard, I thought it prudent to repeat the cupping to the same quantity as before. This was done; and shortly afterwards, all sense of suffocation vanished, and the œdema wholly or nearly disappeared.

On the 1st of July, 1813, I saw Gen. S. on his way through Bath. His pulse was strong, but perfectly regular. He was free from œdema, and suffered no apparent dyspnœa from walking up hill to my house.

Bleeding in Hydropic and Gouty Constitutions.—Mr. P., aged between sixty and seventy, long subject to gout, which, however, had for many months ceased to attack him, was seized with a cough and such a difficulty of breathing as, in process of time, made it impossible for him to lie down in bed. These symptoms being attended with a weak and irregular pulse, gradually followed by œdematous swellings of the legs, were supposed to originate in atonic gout; in consequence of which he was sent to Bath, for the purpose of drinking the waters.

Finding that in addition to these circumstances, the urine was high coloured, turbid on standing, and

very deficient, I was averse to the employment of the waters, and gave him gentle aperients with squills, digitalis, and draughts of potass and lemon juice in the state of effervescence. From these remedies the urine soon became copious and clear, the swelling of the legs disappeared, and his respiration returned to the natural state.

Shortly afterwards, he was suddenly seized with a loss of sense, accompanied with every mark of pressure on the brain, without hemiplegia.

I now most willingly availed myself of this opportunity to employ a measure, which I regretted that I had not before practised. Accordingly, Mr. P. was several times bled, both generally and topically; and each time with the most apparent relief.

In a few days, all symptoms of disorder in the head were removed; but were almost immediately followed by a violent thrush, which also in a short time disappeared: and now, not many days afterwards, when he appeared to be free from complaint, he was seized with a smart fit of inflammatory gout in his extremities, which went through its usual course, and left him in comfortable health.

Œdema diminished by local Bleeding.—Mr. K., aged about fifty, a native of the West-Indies, and a free liver, who had never suffered any known morbid affections of the liver, but for eight or nine years had been afflicted with œdematous swellings of both legs, reaching up to the knees, ineffectually tried for that complaint a great variety of remedies, and, among

others, a course of mercury, so as to excite salivation. Eleven or twelve weeks before I saw him he had sustained considerable injury about the left hip and thigh from a fall; and the parts still continued to suffer great pain all round the head of the thigh bone, either when he moved the thigh, or was warm in bed. The pulse was quick and hard, and the œdematous swellings remained in the usual state. I ordered blood to be taken from the arm. It had the usual inflammatory crust. Two or three days afterwards, fourteen leeches were applied to the hip, and the discharge of blood encouraged by involving the leeched part in lukewarm poultices of bread and water. Much blood was thus evacuated. The next day, the œdematous swelling of that leg was much diminished, while that of the other leg remained as before. Another application of the leeches a few days afterwards produced a still farther reduction of the swelling of the left leg, while that of the right suffered no change.

Bleeding in Dropsy with diseased Liver.—Blood in Mr. C., aged about thirty, very inflamed and cupped, tough in the cruor, not diffusible in the serum, and large in proportion to it. Serum clear and of natural colour. If bleeding is good for the inflamed state of liver, what matters it whether there is watery effusion or not, either in the abdomen or elsewhere?

Quere as to Dropsy.—As this probably arises from indirect debility, might it not be a good thing

to examine how far it is apt to occur among the poor and indigent, who at the same time are temperate? and whether, among the better classes, a complete resolution of this and many other cases of long continued increased action might not be effected by the total, or almost total, abstraction of food, allowing only the use of water, cold?

Evacuation by Leeches, relieving Œdema.—In Mr. B., who had a paraphymosis, from the irritation of a bougie, and travelling a long way in a carriage too soon afterwards, without any venereal complaint, in which the prepuce and skin of the penis were greatly swelled, transparent, and œdematous, after many days previous though ineffectual remedies, the disorder was immediately relieved by the application of one leech, and totally cured by two others.

Effect of Purging in Dropsy.—In Mr. P., aged about sixty, much accustomed to gout, long suffering mental affliction, and an habitual drinker of spirits and water, though not to intoxication, an obscure fluctuation came on in the abdomen, and considerable œdematous swelling in the legs and thighs, though without any violent disease of the liver. Various diuretics had been administered in vain. A small dose of cryst. tartar. jalap, and gamboge was given, which operated very copiously eight or ten times, fatigued him very much, and seemed to produce delirium. Seven drops of laudanum were given twice in the evening, from which he slept quietly. In the

course of the next twenty-four hours it was repeated three or four times, though without producing sleep. During the two following days he had no motion, and the urine continued of the same light colour, and in no greater quantity than before. His head still continued light, though he was not violent; the pulse rather quick, and very full and bounding. The day of the purging the œdema began to diminish, so that in two days after it was nearly gone, and no fluctuation remained in the abdomen.

In Mrs. V. the œdema was certainly carried off by the purging; but it had no effect on the ascites.

Effect of relative Over-Nutrition in producing Dropsy.—Mr. P., of middle age, long labouring under vomitings after almost all his food, with quick pulse, and emaciation, with other marks of hectic from some disease of the abdomen (not liver), had the vomiting cured by medicines directed by me; at the end of a week after which he was seized with anasarcous swelling of the feet and legs. After this had continued a few days, a purging came on, and in two days more, the anasarca went off and never returned.

Excellent effect of Digitalis in Dropsy and Hæmorrhage.—Capt. A., of middle age, while in the Indian Ocean he was sitting in his shirt in the cabin of a country ship of which he had the command, was suddenly struck with a cold blast of wind through the open windows, in consequence of which he was seized with a cough, accompanied with considerable dyspnœa.

In this state he came to Bath, where, on account of a widely spreading eruptive complaint, he was advised to drink the saline aperient water of Middle-hill, near this city. His eruption was relieved, but the cough was much aggravated, and was soon attended with an expectoration of blood, which was much diluted, but sometimes amounted to half a pint in twenty-four hours.

After a long continuance of this hæmorrhage, and much fever and emaciation, dropsical symptoms supervened, and yielded to none of the remedies prescribed by the late ingenious Dr. Ewart, under whose care he had placed himself.

When, at this period, I was called into consultation, the legs and thighs of the patient were swelled to an enormous size. There was also a palpable fluctuation in the abdomen, and the quantity of urine did not exceed half a pint in the twenty-four hours. The pulse was 136 in a minute, extremely small, weak, and irregular. The cough and bloody expectoration continued in their fullest extent, and Captain A. was unable to remain in bed, except with his body erect. He was then taking squills and steel, and had an issue, or seton, in the side, which was regulated by Mr. Grant, surgeon.

This case appearing to me in every view proper for the administration of digitalis, which was then newly re-adopted into practice, that medicine was accordingly given in substance, to the extent of about three grains in a day, in addition to the other remedies which I have specified, and which were continued

in the same dose as before. In the course of three days a sensible and most beneficial operation of the remedy ensued. The pulse began to diminish in frequency, and to become proportionably more regular and full; so that in the space of a week it was reduced to 48 in a minute, and was equal, and of natural strength. The improvement of the urinary discharge kept exact pace with that of the pulse. It lost its sediment, became more pale, and at the end of a week amounted to six or seven pints in the day and night. The swellings and hæmorrhage declined, and the breath improved in the same proportion; so that within a fortnight from the first administration of the digitalis, without the least sickness or other inconvenience from its use, Captain A. was able to sleep with perfect ease in the horizontal posture, was free from cough and hæmorrhage, and in other respects perfectly exempt from disease.

He left Bath some weeks afterwards, and on his return, at the interval of some months, had suffered no relapse of his complaints.

Tendency of Stimulants to produce Effusions, especially when given in a state of Convalescence.—A gentleman, aged nineteen, much addicted to field sports, who from his earliest youth had freely indulged in the use of wine and women, and whose father died of abscess in the liver, in the autumn became affected with syphilis, for which he underwent the usual mercurial process. During this course, having exposed himself to cold in hunting, he began to have a cough,

accompanied with fever, which however did not deter him from an occasional repetition of similar indulgences, till he was seized with evident pleuritic inflammation, for which no active measures were at first employed. Afterwards, however, copious bleedings, and all other circumstances of the antiphlogistic regimen, were assiduously used.

When under this plan all symptoms of active inflammation had been subdued, I first visited him. His pulse was still, in the evening, considerably above 100 in a minute, though slower in the morning, and was soft and weak; his skin cool, and his tongue moist and clean. He could not readily make a deep inspiration. Walking produced much breathlessness; and when he lay down, his respiration was considerably incommoded by a sensation of a heavy weight falling in his chest to that side on which he happened to lie. He had no cough. His countenance was pale. His urine was high coloured and defective in quantity, and his feet and legs were considerably œdematous. There was some suspicion, though no absolute certainty, of preternatural hardness in the right hypochondrium, which was somewhat sore on pressure. His appetite was moderate, and his stools unduly pale.

These circumstances impressing me with a conviction that hydropic effusion had taken place in the thorax, I recommended a continuance of the antiphlogistic diet, a combination of squills and digitalis, with effervescing draughts of potass and lemon juice, together with occasional doses of calomel as a purgative.

In a few days, the pulse came down to 72 in a minute, even late in the afternoon; the urine resumed its natural colour and quantity; and the breathing was much improved.

Thus he went on for some time, evidently convalescent, when some anxious friends, fearful of debility and other visionary evils, recommended to him animal food and wine. In a few days after this change of plan, his pulse became again quicker, so as to exceed 100 in a minute, his belly began to swell, and an evident fluctuation became perceivable in the abdomen.

A rigid abstinence was again enforced, and squills and calomel had recourse to. He once more mended, the pulse being restored to the natural state, and the fluctuation being removed.

In the end, he perfectly recovered.

Curious Evacuation of Water in Anasarca.—In Mr. J., seventy years of age, after twenty years œdema of legs, sixteen pints of water flowed out in a full stream from the legs, on scarification, from eight or nine punctures. The legs and thighs were totally reduced. [June, 1807.]

If *anasarca* is the consequence of excessive determination (and it certainly is increased by heat), it ought to be curable or capable of relief by *cold*. Upon the same principle, the inflammation on the skin, and the erysipelatous state, or whatever state it is which begins with redness and bladders, and ends in sloughs, should be prevented or alleviated by cold. [1804.]

Hæmorrhage.—That hæmorrhages are connected with the usual febrile impetus is evident. In Mrs. B., in whom, at a certain period of life, came on flooding, which continued for two years at the regular period, there was never a total cessation of sanguineous discharge, except now and then during the day; but there was always an aggravation at night.*

Theory of Bleedings, as at the Nose.—Whether it be an evidence of fulness or relative relaxation of the vessels in general, matters not. Experience shews that it is connected with a hæmorrhagic state of the vessels of the head or other part to which it is near; and, therefore, that means which are most effectual should be employed for the relief of that part, if not of the constitution.

Vascular Evacuation producing Ease, &c.—In cancer, hæmorrhage diminishes the local and constitutional irritation; and in the pain and inflammatory fulness of the superficial part of ulcers, this and other discharges from the surface relieve the pain and irritation and soreness in them.

Proofs that Petechiæ, Redness of Eyes, Wildness of Delirium and Heat, all arise from increased Impetus of Blood.—In Mrs. B., aged thirty-eight, in a typhus, on the twelfth or thirteenth day petechiæ

* The subject of Hæmorrhage, as of Dropsy, is introduced here in illustration of the general principle. See farther, Apoplexy, Epistaxis, Hæmoptysis, &c. &c.—Ed.

appeared on the hands, arms, and breast, of a cloudy marbled hue; the eyes at the same time red; the pulse from 112 to 120, the respiration from 50 to 60 in a minute, with incoherency and quick manner, dry tongue, and considerable heat. Leeches were applied to the temples, strong purgatives administered, the head shaved and washed with cold applications. In two days (the fifteenth day) the pulse came down to 92, when in a few hours the redness of the eyes disappeared, together with the petechiæ, the heat and quick manner went off, and were succeeded by torpor, in which the urine and stools were passed without knowledge, but the patient became convalescent. On the eighteenth day, P. 84, R. 40, stupor lessened, and there was more consciousness.

This case shews that increased impetus does more in producing petechiæ, &c. than increased exhaustion; because more exhaustion, at least of the brain appeared to have taken place as the petechiæ were disappearing, and had disappeared; and the patient afterwards passed her urine and stools insensibly; and the following day or two there was a want of stimulus to make water, and consequent deficiency of that fluid, which, on the eighteenth day, and for several succeeding days, was drawn off to the amount of about two quarts. The bowels, also, became so torpid, as to be scarcely opened by Calomel. Extr. Col. Comp. āā gr. xii. Yet the bladder had not lost its contractility, for the urine readily followed the introduction of the catheter, and was evacuated without any pressure whatever. The petechiæ, heat, and redness of the eyes, evidently

ceased, because the action of the heart, and therefore the impetus of blood, was evidently much diminished, relatively to the contractile power of the extreme vessels.

Inflammatory Petechiæ.—Jan. 21, 1812. Master W. T., aged nine years, who has previously enjoyed good health, was thrice yesterday morning affected with slight bleeding at the nose, unattended with any disorder of the head. About 3 P. M. he complained of pain and soreness about the colon, and had frequent sickness and vomiting.

The pain now continues in fits, with frequent ineffectual efforts to evacuate fæces. About 3 o'clock he had a motion, with a little blood, which is fluid, and of a florid colour. To-day there have appeared on his legs many small flat spots, of a roundish form and various sizes. They are ecchymoses, and of a rather light red colour. Skin hot. Pulse 128, full, and hard. Tongue clean. Urine natural.

Mittatur sanguis è brachio ad ℥iv.

℞ Olei Ricini.
Mannæ āā ʒj.
Pulv. Acaciæ Gummi, gr. x. Contritis adde
Aquæ Menthæ pip. ʒij.
- - - distillatæ ʒvij, ut ft. Haustus, statim sumendus, et 4tâ quâque horâ repetendus, donec ter quaterve dej^{t}. alvus.

January 22. The first draught having been almost wholly thrown up, a glyster was given at half past eleven, consisting of an ounce of castor oil rubbed

down with yolk of egg in twenty ounces of distilled water, and mixed with half an ounce of common salt. This returned in half an hour, and was soon followed by two motions with some fluid blood of a dark colour. A second draught was given and wholly vomited up. A third, at five o'clock, has been retained; since which he has had two loose motions, fæculent, and curdled, unaccompanied with blood. He had previously some delirium, which afterwards subsided, and he has since had some sleep. He is now better, his bowels being less sore, and in no degree tense or swelled, and his pain being less frequent and much slighter than it was. He is free from headach, and his tongue is clean, and skin cool. Pulse 100, and more soft. The spots on his legs and feet continue, and are of a somewhat darker colour than they were. The blood is of a dark colour and firm, the first cup having a moderately thick crust of cupped coagulated lymph.

Sumat statim Haustum ad formam ultimam, et rept. horâ 2dâ, p. m.

Eight P. M. Neither of the draughts having produced an evacuation, except of a little mucus, and there being some pain in the bowels at four o'clock, the glyster was immediately repeated, but though retained half an hour, with a total relief of the pain, it returned only with a small quantity of mucus, without blood. He has had no sickness, and the pain and soreness of his bowels are much abated. He has been now sleeping for more than two hours, and is not flushed or hot. Pulse, on waking, 100, and

rather hard and full. Tongue clean. Spots somewhat more florid than in the morning, and not increased in number; but the larger ones rather more prominent.

℞ Pulveris Scammoneæ compos. gr. xxiv.
Syrupi Rosæ q. s. s. Ft. Pilulæ viij æquales.
Sumat duas statim, et rept. 4tâ quâque horâ donec ter quaterve dejecerit alvus.

Jan. 23. Six pills have been taken, and have produced two motions, both without blood, but the last extremely slimy and fœculent. His bowels have been wholly free from pain, though still somewhat sore to the touch; and he has not only been without sickness, but has some return of appetite. The spots on his legs remain as before with regard to number, and are more brown than they were. Some of the larger are considerably prominent. Pulse 92, and soft. He has slept altogether eight or nine hours. Tongue clean.

Pergat sumere Pilulas ad formam ultimam.

Jan. 24. He has taken eight pills, and had four motions, of which the two last are slightly fæculent and watery, and without mucus or blood. He is free from pain, except some griping previously to his motions. The spots on his legs and feet are now in colour precisely like iron moulds. His pulse is natural, his appetite good, and he is in all other respects free from complaint.

Some days afterwards he suffered a renewal of the petechial spots; but as he was about to return to London, I did not see him. There the disorder re-

turned more than once, preceded each time by some affection of the bowels, and was eventually cured, according to report, by spontaneous diarrhœa.

Inflammatory Petechiæ.—Mr. C., a very strong man of middle size, aged fifty, has for about a month past had all over his thighs petechial spots of various shapes and sizes. A fortnight ago he suffered violent rheumatic inflammation, chiefly in the lower extremities, for which he was blooded to the amount of about eighteen ounces, and purged, with so much relief, that on the 23d ult. he proposed going into his business on the following day. On the 25th, however, he was seized with pain in the abdomen, which became sore to the touch, and on the 26th began to swell. Aperient medicines of various kinds have been fruitlessly administered.

The abdomen is now enormously distended, extremely hard, and painful on pressure, but without any fluctuation. His urine is small in quantity and of a deep orange colour; his skin cold and clammy. Pulse 116, full, and regular. Respiration quick. Mental powers beginning to fail. Clusters of spots and patches of various shapes and sizes are thickly diffused all over his thighs and neck. They are all of a dark colour, and some of them raised above the skin, so as greatly to resemble bunches of black currants, or rather of barberries of a black colour.

This patient would take none of the medicines which I prescribed for him, and died within two days of my visit, which was not repeated.

[Feb. 28, 1815.]

Inflammatory Petechiæ.—J. B. aged twenty-four, had for three or four years been subject to pain of the lower extremities, and chiefly of the ankles, which was occasionally relieved by topical œdematous swellings. About the beginning of March, 1814, he was seized with a great increase of the pain, which affected the left foot across the instep, accompanied with swelling and redness, great aggravation on moving the part, but little soreness to the touch. Neither the pain nor swelling affected any other part. The same night there came out spots of a petechial kind, of a dark red and sometimes purple colour, roundish, and of different sizes. They first affected both thighs, then extended themselves to the legs and feet. The thighs and legs were not considerably sore, but were stiff, and as it were benumbed, when he attempted to walk. His appetite for animal food was diminished; his pulse was somewhat quickened, he was thirsty, and his rest was disturbed. His urine was also high coloured, with a great deal of sediment.

In this state he obtained some temporary benefit from purging. But the complaint returning with increased violence, he was blooded on the 25th of March, to the amount of ten or twelve ounces. The blood had all the appearances which occur in that of pleuritic patients; and at the end of three days the chief part of the disorder was removed.

About this time he became very hoarse, with a considerable cough and soreness of the throat. On the 5th of April, his pulse was natural, his skin cool, his tongue clean, his appetite good. He was, also,

free from all pain and swelling of the foot and leg. He still, however, continued extremely hoarse, and a broad damask coloured spot, of an irregular shape, occasionally appeared on the leg. I ordered another bleeding on the 7th, to the amount of twelve ounces. The blood was in precisely the same state as the former.

On the 15th, no return of pain, swelling, or petechial spots had taken place. The hoarseness was almost gone; his pulse was slow and soft, and he was in other respects perfectly free from disease.

Petechial Spots.—Mr. H., aged seventeen, of a fair and clear complexion, of a scrofulous family, who had himself had suppuration of the glands in the neck, had been for some time engaged in an occupation which required much standing within doors; and had a rather voracious appetite, though with moderately open bowels, began, a fortnight before my first visit to him on the 16th of March, 1814, to be affected with spots and patches of various shapes and sizes, of a dull red colour, thickly spread over the arms and lower extremities, but more especially the latter. These spots were not raised above the skin, did not disappear on pressure, and were evidently ecchymoses. Considerable pain about the ankles occurred about the 4th day, but soon yielded to œdematous swellings of the feet, which gradually arose above the knees, and were always very much increased in the evening, producing great stiffness and painful distention of the affected parts, which on the right side extended themselves even to the hip. On the left

foot were some large patches of a pale livid hue. These symptoms had progressively increased till my visit. He had suffered no hæmorrhage from any part, his urine was said to be of a natural colour, and his bowels were moderately open. Pulse 100, and soft. Skin of the legs and other parts cold. Tongue covered with a yellowish brown fur, but moist.

He has taken two brisk doses of opening physic, and subsequently decoction of bark with sulphuric acid, for several days.

℞ Acidi Nitrici ʒss.
Syrupi Mori ʒiijss. Sum^{t}. gutt. lx ad lxx ter die in aquæ frigidæ unciis quatuor.

℞ Magnesiæ Sulphatis ʒiss.
Infusi Rosæ ʒiss.
Acidi Sulphurici diluti gutt. viii.
Ft. Haustus, singulis Auroris sumendus.

March 20. He took the medicine thrice on the 17th; but the first dose on the 18th produced, after two hours, pain in his bowels, and vomiting; which were renewed after the second dose; in consequence of which the medicine was discontinued. There was one rather costive motion on each of those days; notwithstanding which I directed him to take, on the 18th and 19th, at bed-time, six grains of Extr. Coloc. comp.; and the opening draught each morning; and these medicines produced five loose stools, and two to-day. The swelling of his legs began to abate on the 18th, and is now almost gone. The spots and patches on his arms and lower limbs have nearly disappeared; but on the upper part of the right

thigh there are still a few petechial spots. Yesterday he began also to have slight œdema of the hands, and under the eyes, and there is a livid appearance under the left eye, and round the margin of the upper eyelid, on the same side. Bowels free from pain. Appetite good. Tongue red and polished, but disposed to dryness. Pulse 120, and weak.—Pergat.

March 22d. Two motions yesterday and one to-day. He took yesterday two doses of the mixture without inconvenience. Yesterday afternoon he began to suffer a return of pain in his thighs, knees, and legs, which soon became œdematous; and shortly afterwards new petechial spots, of a larger diameter and of a deeper purple than before, appeared on the lower extremities from the ankles to the nates and groin. These continue, with œdema, and a large livid ecchymosis on the inside of the left foot. He complains of pain and soreness about the lower lumbar vertebræ, where there is tenderness on pressure, but no perceptible swelling or discolouration. Appetite and tongue as before. Bowels free from pain. Nights tolerably good. Urine made last night small in quantity, and very turbid. Pulse 108, and more full and strong.

Pergat in usu Pilularum, Haustûsque matutini; et Misturæ Nitricæ ter die.

March 24th. He has taken his medicines regularly, and experienced some slight sickness after one dose only of the nitric mixture. Three loose motions yesterday, and three to-day. The œdematous swellings are somewhat lessened, but the ecchymoses are

more numerous, some of them increased in diameter, nd all of a more deep purple than before, very nearly reaching the colour of a decoction of logwood. His pains are now chiefly round his thighs, especially under the hams, near the knees, which are very tender to the touch, and where the skin is stiff and hard, without discolouration or œdema. The spots extend here and there up to the groin, but affect no higher part of the body, or the upper extremities. Urine more copious, of a natural colour, and clear. Tongue as before. Appetite tolerably good.—Pergat.

March 26th. He had four loose motions yesterday, and one to-day. On the 24th, he took one dose of sixty drops, and two of sixty-five; yesterday one of seventy, one of eighty, and one of ninety; without inconvenience. A few fresh spots have appeared on his thighs and legs, and some also on the back of his left arm. The former ones are some disappearing, and others becoming larger, but all of a paler colour than before. He has less pain in his knees and thighs, in which the skin is less stiff and hard, and the œdema is chiefly confined to the ankles, where it is in some degree increased. Tongue somewhat less polished, and of a paler colour than it was. Appetite good. Urine of a natural colour, in good quantity, and with some urea at the bottom. Nights good. Skin cool. Pulse rather under 100, and more full.—Pergat sumere medicamina.

March 28th. He has had from two to three loose motions daily. Swellings increased. Spots less dark; but about his left thigh there are several new vibices;

and he complains of a great deal of pain about the knees. Urine thick on standing, and in small quantity. Tongue and appetite as before. Pulse 100, and soft. The legs are cool ; and about the feet there are large dark patches, which seem to be of venous blood, in the cutaneous vessels, as they disappear on pressure.

Pergat in usu Misturæ cujus sumat guttas ccl, vel etiam ccc, in aquæ ℥iv. ter die.

Rep^{r}. Pilulæ, et Haustus aperiens.

March 30. He took two doses of 250 drops each on the 28th, three of 300 drops yesterday, and one of 300 to-day, without inconvenience. Yesterday he had three costive motions, two of which were in the evening, and relieved some pain in the lower bowels which he had before experienced. One costive stool to-day. The spots have no where increased ; some have disappeared, and all which remain are paler than before. The thighs and upper parts of the legs are more swelled, and the knees more painful ; but the feet are less swelled, and the skin is less livid. Tongue, appetite, and sleep, as before. Pulse 96, and full. Hands hot, and the veins on them very full. Urine mostly a quart, and almost equal to his drink.

Persistat in usu Misturæ, et Pilularum.

Rep^{r}. Haustus, singulis additâ Magnesiæ Sulphatis ʒi.

April 1st. Four or five loose motions yesterday and to-day. He has taken daily the whole mixture, containing two drachms of the undiluted nitric acid. His pains are diminished, his legs and thighs are much

less swelled, no new spots have appeared, and the former ones are nearly gone, and those which remain are much more pale. Urine nearly equal to his drink, but turbid. Pulse about 108, and less full than at my last visit. Tongue, &c., as before.—Pergat.

April 5th. He has taken only 250 drops twice a day. On the third he had three motions, yesterday five, all loose but the last, and two loose ones to-day. Within these twenty-four hours he has had a return of pain in his knees, and a great number of new spots have appeared on his legs and thighs, of a bright purple colour. An old spot on the inside of the left ankle, which was not observed, has also on it to-day a vesication. Pulse about 112, and somewhat weak. Tongue natural. Skin cool. Appetite good. Urine turbid.

Cras mitt^{r}. sanguis è brachio ad ℥iv.

Pergat sumere medicamenta.

April 7. The blood flowed slowly, was of a dark colour, and put on no appearance of what is called inflammation, but was firm, as that of a person in health. He has continued the 250 drops twice a day; and has daily had from three to four loose motions. Tongue natural. Urine in tolerable quantity, but somewhat turbid. He has complained of some pain and stiffness in his back and thighs; the latter of which are slightly swelled; but there is no swelling in his legs, all the spots are become more pale, no new ones have appeared, and the vesication seems dried nearly up.—Pergat.

April 9th. He has taken 300 drops twice a day,

and has had from two to three loose motions daily. For these two days past he has by my desire wholly abstained from animal food, in which he had before constantly indulged, his appetite having been for the most part good. Pulse 100, soft and small. Ulcerated part very trifling. Tongue clean. Skin cool. Pains continue in some degree about the knees and feet. Spots still diminishing. Urine moderate as to quantity, and not very high coloured, but turbid—Pergat sumere medicamina.

April 12th. He has continued the 300 drops twice a day, and abstained from animal food. Bowels open three or four times daily. Urine for two days perfectly clear; but to-day, as at last report. Some spots on the legs appeared on the 9th, and still continue; and a few new ones have also occurred. His legs and thighs are free from swelling; but he has for these two days after dinner complained of uneasy fulness, and tension in his hands and arms. Tongue much as before. Pulse 84, and soft. Ulceration near the ankle somewhat spread, but apparently very superficial.—Repetantur medicamenta.

April 16th. From three to five loose motions daily. He has taken 300 drops twice a day, and has abstained from animal food. Urine still turbid, but sufficient in quantity. All swellings entirely gone; no new spots, and the old ones nearly extinct, what remain being of a brownish colour. The slough below the ankle is somewhat increased. He has had some pain in his stomach, which he attributes to the acid. Tongue clean. Pulse 82, soft and weak.

Pergat in usu Haustûs et Pilularum.

Sum^{t}. Misturæ gutt. cc tantum, bis die.

April 19th. The mixture having made him sick, he has taken only from 150 to 200 drops twice a day. Three loose stools daily. Spots, swellings, and pain all gone. Ulcer on the side of the foot not larger than a silver twopence, and very superficial. Tongue clean. Skin cool. Appetite good. Pulse 72, soft and regular. Urine of a natural colour and quantity, and quite clear.

Let him continue to abstain from animal food.

Desistat ab usu Misturæ.

Pergat sumere Pilulas cum. Haustû.

Rheumatic Inflammation symptomatic of general increased Impulse.—Mr. E. W., aged seventeen, had several attacks of pulmonic inflammation, ending in suppuration, accompanied with violent hæmorrhage from the lungs.

In the acme of more than one of these attacks, before the abscess burst, and while the heat was extremely great, and the pulse reached 136 in a minute, the most acute inflammation came on in almost all his joints. But no sooner had the vomica burst, than the pulse began to approach to its natural state, and the rheumatic swellings disappeared.

In Mr. B., a young officer, labouring for several months under violent inflammatory rheumatism, in which, among other parts, the right wrist was greatly affected, the veins on the back of the hand were extremely full and prominent. Having made a firm

compression on one of these, just after it had become one trunk from its bifurcation, and having squeezed out the blood from that trunk throughout its whole extent, on suddenly removing the compression I saw distinctly the blood rush into the empty vein, and fill it with a rapidity much greater than occurs in health.

The pulse in this case was about 84, and very full and strong.

Low Pulse in Rheumatism, with Buffed Blood.—In Mr. W., aged about fifty, with rheumatic inflammation flying from joint to joint, with little external redness or swelling, but great pain, and blood with a thick tough corrugated buff, the urine high coloured, and with a dark sediment, the pulse was only sixty in a minute.

Mrs. S., Oct. 1810, with long rheumatic affection under and within the left scapula, and round the upper part of the shoulder, with pain chiefly on motion, and when I saw her, no fever, had a great degree of *insensibility* in the fore finger.

In Mr. D., with rheumatic inflammation in the left wrist and hand, the pulse was considerably fuller than in the right.

Swelling of Veins, with Rheumatic Affection of the Ankle and Heel.—In Mr. S., a young man long affected with rheumatic inflammation of the heel and ankle, painful on walking or pressure, but unaccompanied with fever, or much swelling or redness, all the veins of the leg up to the knee, and those of the

foot on that side, but not the other, were much swelled and full. This state had been of several weeks duration. Four or five leeches were put on the pained parts. The swelling of the veins was in a few hours nearly gone, and the pain was relieved.

In cases of *serous or lymphatic effusion* into the joints, for example of the knee, in rheumatism, as in Mr. S., and various other patients, though unaccompanied with fever, I have not found hot bathing and purging serviceable, but the contrary; but always great benefit from leeching and the application of cold.

Rheumatic Fever, &c.—Mr. C., aged between twenty and thirty, had long suffered under rheumatic fever, in which with a pulse of nearly 120 in a minute, night sweats, great emaciation, almost total loss of appetite, sparing and high coloured urine, he had a painful swelling, with evident fluctuation in the elbow joint. In consequence of a complete antiphlogistic regimen, frequent bleedings, cooling and evacuating medicines with squill and digitalis, the fever greatly abated; and immediately the pain and swelling of the joint entirely disappeared, leaving its motion free.

About this period a swelling was perceived, accompanied with considerable pain in the calf of the leg, which at length came to suppuration under the fascia. This was opened, and about six drachms of sanious matter discharged. The matter not evacuating itself, the ulcerated part was laid open for some length; and now the pulse came down to the natural

state, the sweats entirely left him, he slept well without opium, of which he had constantly taken two grains daily, and he had a voracious appetite.

Mrs. L., three years ago, had rheumatic affection of the wrists, with swelling, which continued nine or ten months; and was relieved by bathing in the tepid sea bath, but aggravated by open sea.

It continued, and extended to the knee and shoulder of opposite sides. After some months she went to Buxton, drank the Waters, bathed and pumped for two months, beginning in June twelve-month. She got nearly well from these means, being able to walk three or four miles. Between these two periods, after having been ill six or seven months, but in a slight degree, she consulted Dr. C., who said her liver was affected; and he continued five months and three days employing mercury, either internally or externally, so as to be more or less salivated, and very much deranged, reduced, and deprived of sleep. It was during this course when the knee and shoulder became affected, and her wrists became worse, that Dr. Baillie ordered her to Buxton, with the effect before described. She again became worse, and went to Harrogate, from the warm baths of which, and drinking, all her complaints were aggravated, and soon after, the joints of the fingers, all but one, which is the middle finger of the right hand, became affected with large nodosities.

Bad Effect of Sweating in the Acute Rheumatism. —G., aged somewhat more than thirty, a painter, had acute rheumatism, affecting his wrists, hands,

and various other joints. According to the universal practice, he was kept in bed, and made sweat by various sudorific medicines, and warm diluent drinks. I first saw him on the fifth day of his disease. The joints were extremely swelled, his skin hot and bathed in sweat, his pulse 120, full and strong, and for twelve hours he had been so delirious that he scarcely knew any one, and was with difficulty kept in bed.

He was by my direction immediately blooded to the amount of fourteen ounces, was taken out of bed, was ordered wholly to abstain from warm liquids, to drink as much cold water as he wished, and to take, every two or three hours, four grains of fresh squill in an effervescing draught of carbonate of potash.

His blood had the usual inflammatory crust; and the symptoms were all immediately relieved by the blood-letting.

The next day the swellings were lessened, his pulse much reduced in frequency and strength, and the delirium entirely gone. He was a second time blooded; his bowels opened by saline purgatives, and in less than ten days from my first visit, was free from all indisposition.

Bark in Acute Rheumatism.—The following has been my experience on the subject of Cinchona as a remedy for acute rheumatism.

In one instance, nearly thirty years ago, of a patient, who, as sometimes happens, had many successive paroxysms of rheumatic inflammation, which lasted several days, and then left a tolerably perfect

remission till the next fit, the Bark did certainly appear to cure the patient, after the failure of sudorifics, and other remedies such as the experience of that day had supplied.

In another case, many years afterwards, in which the patient, Mrs. V., was cured by another process, and in which I gave the infusion of bark with sulphuric acid merely to remove the subsequent debility, its exhibition for a single day produced a renewal of the local inflammation. And when, scarcely crediting the connection of circumstances, I repeated the same remedy after the cessation of the symptoms, a precisely similar effect in a few hours followed. After this second trial, I did not consider myself as justified in making a farther attempt, and the patient continued free from relapse.

In a third instance, Mr. B., the patient had begun to take Cinchona at the commencement of a very inflammatory attack of this malady, and at the end of ten weeks was precisely in the same state as that in which, under other treatment, he would have been in the first week. A different plan was adopted, and the patient soon happily recovered.

It does not, indeed, appear to me that the cases published plead very strongly in behalf of this remedy. The doses were so small as surely not to have had much power over the malady, while, on the other hand, in some of the cases in which it was administered, fatal symptoms appear to have supervened. This is extraordinary. We seldom hear of patients dying of acute rheumatism. In my own practice of thirty-five

years, I have never seen an example of such an event in that malady. The inference, therefore, in favour of Cinchona is not by any means favourable. There is much analogy to shew the tendency of that medicine to produce excessive determination to the vessels of the head. I am, therefore, on the whole disposed to consider it as having in most of the cases done nothing more than preclude the employment of the usual injurious practices, while in those of a worse kind, in which the brain was apt to partake of the general inflammatory state, this remedy, if it did not increase that disposition, at least prevented the early administration of more efficacious remedies.

In three cases which I have within these two years attended, and in which the disease had previously run out to a great length, and had either become chronic, or had extremely reduced the constitution of the patient, I have found Cinchona produce good effects on the general health; and I greatly doubt whether under any other circumstances of this malady than those which I have stated, it will, in future experience, be found equally beneficial with other means.

Cold Applications in Rheumatism.—Mr. G., aged about forty-eight, had for many weeks been affected with violent pain in the hip and thigh, which afterwards left those parts, and was confined to the side of the sacrum. In this situation he had no pain on motion or pressure; but soon after he went to bed, the pain came on in so excruciating a degree as wholly to prevent sleep. In the commencement of the disease, he was greatly relieved by general and

topical blood-letting; but when the disease returned, with as much violence as before, while his pulse was 66, and soft, his skin cool, and his appetite tolerably good, neither general nor topical bleeding afforded him any relief. His blood, notwithstanding this state of his pulse and skin, was always extremely firm, and covered with a thick crust of concave fibrine, with puckered edges.

After having for some time, in conjunction with Mr. G. N., ineffectually tried various remedies, we found that Mr. G. was in the constant habit of taking hot gruel and other slops at night, in order to induce sweating. From these we desired him to desist, recommending to him to take all his drink cold, and when the pain came on at night, to bathe the part affected with a cold lotion. The very first application was so effectual, that the pain which came on as usual soon after Mr. G. went to bed, ceased after a few repetitions of the cloths dipped in the cold lotion; and returning again during the night, was soon again chased away by the same process. In consequence of this relief, Mr. G. slept more than he had done for several weeks before. The next night, though no lotion was applied at bed-time, the patient slept, free from pain, till three in the morning, when he was wakened by it. A short application, however, removed it, and he slept till the morning.

The next day Mr. G. was seized with violent head-ach, which was immediately relieved by the application of eight leeches to his temples; and from that time he remained free from all complaint.

Rheumatic Affections.—Hip Case.—Mrs. T., aged forty-one, had borne three children, the youngest of whom is ten years old. She was subject, during the greater part of her life, to frequent attacks of rheumatism. So early as at the age of nine years, she had what was then considered acute rheumatism. In the last five years, she had three attacks in a chronic form, affecting all her joints, but more particularly those of the lower extremities; producing pain, and, at times, great difficulty and even incapacity of walking. She experienced great relief from warm sea-bathing, when the complaint was violent; but sudden variations in the atmosphere, or exposure to cold, almost always brought on a recurrence of the disease in a greater or less degree. About four months since, she complained of a pain in the middle of the right thigh, so acute as to destroy her rest, and prevent her walking, without considerable pain and lameness; unaccompanied, however, by any febrile symptoms, or the least acceleration of her usual pulse, which was generally under 60: and she at all times, even in the heat of summer, complained of coldness of her feet and hands. She had recourse to warm bathing, the pump, blisters, and all the remedies for rheumatism, from which she had at other times experienced relief; but without any material alteration. One day in walking across the room, her right leg gave way, and she fell, in consequence of the sensation of a violent blow on the middle of the thigh, where the pain had constantly been. She thought, at the time, that her thigh was broken, but no injury

appeared to be done, though, a few days after, there was an appearance of extravasated blood under the skin in that part, which soon disappeared: but the pain and lameness were so much increased, that she was scarcely able to stand. Soon after the fall, she was suddenly seized with pain in her knees, ankles, and wrists; her pulse was much quickened, her skin hot and feverish. In the middle of the right thigh, and groin of that side, the pain was most acute. She was bled three or four times, and at each time the blood exhibited strong marks of active inflammation. In six or seven days, her pulse came down to about 70; and the knees and ankles were swollen, and more free from pain. In the right thigh and groin, however, the pain was as acute as ever, extending down the inside of the leg to the foot, but she never felt pain about the back part of thehip, behind the trochanter, or on the outside of the thigh. In this state she remained for nearly twenty weeks without any material alteration, without any diminution of pain in the right thigh and groin; but the pain in the left was only occasional, though not unfrequent, and both knees at times were swollen, seldom, however, for more than two days. She lay on her back, inclined to the left side, with the left leg constantly drawn up, so as to give the right an appearance of being much longer than the other. She was incapable of moving her body in the smallest degree, and being moved produced excessive pain, and unless she was replaced in the exact position in which she constantiy lay, her pain was very much aggravated. In consequence of

the pain produced by moving her, she passed her urine only once in twenty-four hours, and often only once in forty-eight hours; and, for the same reason, she could not be brought to take opening medicines oftener than once in a week, though she had never any evacuation from the bowels without taking purgatives. She was moved out of bed only seven times during her whole illness, and then remained up merely to have her bed made, and always experienced great pain in being lifted up, and for some time afterwards. She took very little nourishment, and abstained very much from fluids, from the sole apprehension that she should increase the necessity of being moved. She slept very little, frequently not more than two or three hours in twenty four; and complained that the pain in her right thigh and groin, and across her back, was incessant. During this whole time, her pulse was in general not more than 64, and never exceeded 70, in a minute. She continued to menstruate till within two months of her death. In the last six weeks of her life, large and repeated sloughs formed on the back and nates, which had for some time been ulcerated. The pain was not at this time so violent, but was still in the right thigh and groin, and down the spine. Her pulse became small and quick; she took no nourishment; had frequent sickness, and sometimes vomiting; and died on the 25th of April, twenty-seven weeks from the time she took to her bed.

The body was examined on the 27th. It was so emaciated as to shew the form of the bones distinctly,

and there was very little appearance of muscle. The anterior superior spine of the ileum on the left side was four inches higher than on the right, owing to an evident curvature of the spine. On opening the abdomen there was no appearance of omentum, the intestines were not more than half their usual size. The stomach was contracted, and lay in a longitudinal direction down the right side of the abdomen. The bladder was contracted, and contained no urine ; the uterus and ovaria were perfect ; the spine in the whole extent of the abdomen was curved to a great degree, the convexity being on the right side. The cartilaginous substance of the spine was of so soft a texture, that the spine could, with a little force, be bent in any direction. The vertebræ were not carious, and the cartilages, though softened, were not ulcerated. On examining the right hip, the small remaining muscles of the thigh appeared to have been affected with inflammation, there being in different parts an extravasation of serous fluid. The capsular ligaments of the joint were not diseased. The cartilage, which covers the head of the femur, and that which lines the acetabulum in the os innominatum, were destroyed. The bones were rough, but not carious. The periosteum was perfect round the cervix femoris ; and there was no disease of that bone, or its periosteum, down to the lower extremity. There was about half an ounce of bloody ill-formed pus in the hip joint.

[April 27, 1809.]

To this description of Mr. G. Norman, I add, that the curvature of the spine must have been the effect

of the want of action in the muscles which raised the right side of the pelvis, and of the consequent preponderance of action in those of the left, from which the cartilaginous substance interposed between the vertebræ was constantly pressed on the left side beyond the due bounds, and at length yielded to the force which was continually applied. That this was the case was evident; because by a strong counterforce, applied as the body lay on its back after death, we were able to straighten the spine; and then the ilia, and consequently the soles of the feet, were restored to their proper positions. This case demonstrates the truth of the fact, first announced by Dr. Falconer, that the elongation of the lower extremity in hip cases arises merely from the depression of the pelvis on that side. The fact admits an easy explanation from the theory which I have given above, and which supposes the muscles on the affected side not to act, because drawing up the pelvis on that side must necessarily stretch the parts about the articulation, and therefore give pain.

This case also, I think, explains the theory of mechanical assistance to distorted bones, and points out the cases in which it would probably be useful.

What is the difference between Rheumatism and Gout?—1st. Does it consist in the symptoms of the affected parts? Certainly not. In the cases supposed to be distinguishable, the part or parts in both are sometimes swelled, sometimes not swelled, sometimes hot, sometimes cold, sometimes red, sometimes pale.

2dly. Does it depend on the nature of the pain? No. In both, the pain sometimes exists while the parts are at perfect rest, sometimes occurs almost only when the parts are moved or touched. In both, also, the pain is sometimes alleviated, sometimes increased, by the abstraction of heat; and the converse.

3dly. Does it depend on the nature of the parts affected?

Here too there is no just ground of discrimination. Both maladies tend to fix on the neighbourhood of the capsular ligaments of joints.

If the abstraction of stimulus produces direct debility, and this is the *occasion* of the gout, according to Brown, the actual paroxysm of gout certainly consists in the increased excitement which follows; and, in this respect, what difference is there in the effect between this disease and acute rheumatism, consisting in the undue excitement of parts which have previously undergone direct debility from the application of cold, or, in more philosophical language, from the abstraction of the stimulus of heat? On this theory, what difference ought there to be in the practice in the two cases, the causes and actual state being the same?

Gout is made a term of a class falsely, instead of being a genus, as it is. Gout is a case of irregular determination, no farther peculiar than that it shews a predisposition existing about the joints. Scrofula is the same state in the lymphatic glands; scirrhus in the conglobate; nervous affections in the head; dyspepsia in the stomach; bilious complaints, as they

are usually termed, in the bowels, &c. &c. These circumstances may, therefore, alternate with each other, and with the gout itself.

Gout is often mistaken for a strain, and mischievous attempts to cure it made, in the following way. A person shall actually strain the foot or instep, which shall be slow in recovery, and when well shall be in such a state, that at after periods it shall be liable to be again easily hurt; nay, if any gouty determinations take place in the habit, they shall spontaneously affect that part, without any new strain; and these shall alternate with disorders of the alimentary canal. This, I think, was the case with Miss W., in whom the part was still treated as a strain, by cold water, &c.; and its cure more than once followed by evident indigestion and bowel complaint.

Gouty Pricking of Feet relieving other Symptoms.—In Mr. S., while the pricking continued, he had always less aching pain of back, and less of dyspepsia.

Gouty Cramp, and Startings of Limbs.—These occur in the muscles of the affected limbs, either before or after the fit; the cramps more usually before, and the startings usually after. They both occur chiefly during sleep; and the latter more especially on first falling asleep, just as oblivion is come on. These twitchings, though alleviated by opiates, are not to be cured, in some cases, till after the patient has begun to use the muscles. This is a curious, and

I think complicated, fact. It does not wholly arise from want of use in the muscles, because the cramp very often precedes any sort of gouty pain in the neighbouring joints, and, indeed, occurs as a prelude in the midst of perfect health, and the fullest and most habitual exercise. It must, therefore, depend on some condition of the muscles connected with the condition of gout. I think it is vascular fulness, which disposes the muscles to inordinate action, or to contraction beyond the natural degree. So, also, the twitchings after the gout, when all the parts are too much affected with sanguineous impulse. It occurs most during sleep, because then the motion of the muscles is not modified or directed by impressions or affections of the mind. It is not removed till exercise takes place; because, *first*, the very power of exercise implies a diminution of the cause or undue fulness; and *secondly*, in muscles least used, as in the tibialis anticus, when the gout has been in the great toe, because exercise itself probably produces muscular contraction of the vessels of the part, and therefore diminishes their fulness; and because excessive irritability or capacity of excitement in muscles seems perhaps to be, exclusively of the former considerations, produced by not using the muscles.

Sweating, or the Causes of it, produces Gout.—Mr. N., aged forty-seven, whose ancestors had been greatly afflicted with inflammations of the joints, was himself, also, for twenty years, both winter and summer, subject to violent inflammatory affections of

of the same kind, chiefly painful on motion, and admitting of relief from the application of external heat. He was accustomed at all seasons, whether sick or well, to profuse sweating during the night; and these attacks of articular inflammation would often come on, with fever, in the midst of the sweating, and without any previous dryness or coldness of the skin.

I know two other gentlemen, who clothe their feet very warmly, and who are always most liable to fits of gout in their feet, when they perspire the most.

[June 24th, 1808.]

Gout from Lead.—I observe that, after the palsy from lead, patients of a middle age, otherwise previously healthy, are very subject to fits of gout in the limbs. Mr. C., among others, had gout in his foot, and was somewhat relieved by it.

These facts prove that lead has the power of producing undue arterial plethora, perhaps, as in other cases, the result of want of due contraction of the coats of the arteries so affected. [1807.]

Causes of Gout in Paralytics.—As it appears that persons with paralysis from lead, or extravasation in the brain, are often affected in the weak limbs with gouty inflammation, it may be questioned whether it arises from any immediate effect of the causes on the arterial system of the parts, or from want of local exercise. It probably, however, arises from relaxation and consequent fulness of the vessels; just as in

paralytic limbs heat and pain may take place from a similar cause. It appears, however, inconsistent with this, that in the palsy from lead the parts are generally cold, and the pulse of the paralytic side often weaker than on the other. Yet in the latter case the hand generally swells, and so does the back of the hand in palsy from lead.

Termination of Gout.—Hæmorrhage from the nose and stomach, in Mr. R. &c.: dropsy in the legs, with a proper quantity of water, and symptoms of determination to the head, with loss of appetite and dry tongue, in General O. In this case, epistaxis or epilepsy was foretold by me. He was cupped; but epistaxis occurred four hours after, and he recovered. In Mr. G. there were similar symptoms, with dulness, and a sort of stertor or oppressed breathing, though he was up, and broad awake. I foretold epilepsy to Mr. H.; who wondered why, in that state of debility, I should order leeches; which, however, did no good. Epilepsy within a few hours followed, and he died. All these are instances of incontractility of vessels of various parts. Of this threatening of epilepsy the symptoms were a peculiarly dry and furred tongue, rather labouring and slow pulse, depression of spirits and dulness, some drowsiness, a peculiar oppression of breathing to the patient's feelings, and occasional stertor, even when awake. Urine in very large quantity.

Gout of the Stomach, true Inflammation.—Mr. C., an eminent surgeon, aged 47, from the time he was

nine years old, was subject to violent inflammation of the joints, usually called gout, which for the twelve last years of his life attacked him twice a year, confining him at least five months to his room. He was a free liver, eating and drinking a great deal, fond of hot suppers, sitting up late, taking strong exercise on horseback in the way of his profession, and often hunting in the course of the same day. He was liable to indigestion; and for the last three years, whenever the gout left his hands and elbows, however slowly, though not when it receded from the lower extremities, he was affected with sickness and vomiting, which usually continued three or four days, with great debility, a weak and irregular pulse, and disposition to syncope.

During and after the attacks of the gout he continued to drink daily from one pint to one and a half of Madeira, together with from one to two pints of home-brewed beer, of twelve bushels of malt to the hogshead.

In October, 1807, he had a regular attack of very inflammatory gout in the lower extremities, which at first was attended with fever. At the end of a fortnight these symptoms were followed by inflammation in his hands, elbows, and the muscles of his neck, which continued for ten days, and left him incapable of retaining any thing in his stomach except bread and cheese and beer, taken at twelve o'clock at night. He then became better, and after being confined to his house for nine weeks, went out about the beginning of December. On the 5th of January, 1808, he

was taken ill with a sore throat and relaxed uvula, followed on the 7th by a fit of gout in his feet, in which they were red and swelled, with considerable fever, though the throat was pallid, and the tongue not incrusted. The hands and elbow then became successively affected with inflammation, which in some degree abated, but never left him while he lived.

On the 27th of January he began to be sick, and so continued, always unable to take solids, and immediately uneasy after having swallowed any fluid. He complained of heartburn and pain in his stomach, with some soreness on pressure, and had frequent loud eructations of wind. What he swallowed was immediately more or less rejected by vomiting, and this, in the commencement of the sickness, was merely what he had drank, become very acid. Afterwards it became brown and clear, as if slightly tinged with coffee; then gradually more brown and opake, and at last of a reddish tinge, as from an admixture of blood.

He continued to take wine, usquebaugh, pine apple brandy, gout cordial, and other stimulants, till I saw him on the evening of the 3d of February. He was then scarcely able to give any connected account of his feelings, and complaining of nothing but sickness. He had no pain in his stomach, and acknowledged no uneasiness from gentle pressure. I could not perceive any hardness or swelling there, or in the adjacent parts. His pulse was natural as to frequency, though somewhat fuller and stronger than was usual in his better health. What he suffered from ingesta,

was not pain in his stomach, but increase of sickness. His tongue was red at the point, and brown and smooth more posteriorly, as from incipient aphthæ; and he was always thirsty. His heat was fully equal to that of health, or, perhaps, somewhat above it.

Blisters were applied to the stomach and other parts, and, among other remedies, pills were given, consisting of Extractum Colocynthidis compositum with opium. Of these pills, some were in part retained, and others not. His bowels were however opened without much difficulty, the fæces being in a dissolved state, and of a dark brown colour. In one of them, a pill was observed to have passed nearly unchanged.

These measures were wholly unavailing. The symptoms continued without alleviation, and almost every thing which was swallowed, was immediately thrown up by incessant vomiting. On the morning of February the 4th, he began to be affected with subsultus of the tendons, which increased till the 7th, when he was seized with general convulsions, in which I was unable to feel his pulse, and he had some degree of cold sweating. From this state he recovered so as to be sometimes sensible, though at other times slightly delirious; but expired quietly at half past one o'clock on the morning of the 8th of February.

He was opened in my presence at four o'clock in the afternoon of the same day.

The body was extremely offensive to the smell, as if from putrid fæces, though it was not defiled with

them; neither was there any mortification, or apparent commencement of putrefaction, in any part.

In the brain, and other parts within the cranium, there was no deviation from the natural state, except that the whole appeared more watery than usual; and about an ounce of serous fluid was found below the cerebellum, and round the medulla oblongata.

The muscular parts of the limbs were extremely shrunk; but the trunk of the body was enormously fat; and the fat itself about the belly seemed imbued with water. A degree of fatness also, much beyond what we had ever seen, existed on the inside of the peritonæum, lining the parietes of the abdomen, and in the omentum, mesentery, and mesocolon. In the cavity of the abdomen there was no water. The liver, spleen, and pancreas were in a healthy state; as were also the intestines, which were empty of fæces. The gall bladder was distended with dark coloured bile. The stomach was slightly distended with air. Its outside had the natural appearance; but within, the villous coat was in a very diseased state. The whole cardiac portion had more or less of inflammation, appearing in dark red spots and patches of various sizes, having gradually less of interval towards the greater curvature, where the entire villous coat was of this colour, which did not extend into the muscular coat. The diseased surface, on being cut, every where poured out blood. In the great end of the stomach there lay about an ounce of the same reddish brown, opake fluid, as had, at last, been thrown up by vomiting. None of these appear-

ances were observable in the pyloric portion of the stomach; and both the pylorus and cardia themselves were free from inflammation and all other disease.

In the thorax, the heart was small, and loaded with fat; the lungs and every other part in a healthy state.

Chalk Stones.—Colonel N., aged nearly eighty, long subject to gout, which for several years has chiefly shewn itself in form of chalk stones, by which almost all his joints have been nearly rendered immoveable. For sixteen years he has not been out of his house, only going from one room to another. His health has been otherwise good; his appetite rather large.

He was opened this day, Sept. 28, 1814. There was no visceral disease whatever, except perhaps that the liver had somewhat more of the mottled nutmeg appearance than is usual; and that the spleen and heart were larger than common, and the aorta proportionably capacious, so that the circumference of a transverse ring, at between one and two inches distance from the opening of the coronary arteries, was three inches and five-eighths. Round the cardia to some distance into the stomach the villous coat was of a purple red colour.

Chalk stones, or urat of soda, of different degrees of consistency, were very largely deposited in various parts of the extremities.

Below both knees, on the forepart of the tibiæ, there was under the skin a considerable collection of

purulent matter, mixed with chalky substance, many granules of which were in a somewhat hardened state. These abscesses were in the cellular membrane, and were neither open, nor communicated with the cavity of the joints.

The articulating surfaces of the condyles of the ossa femoris, the tibiæ, and the patellæ, were covered with a smooth crust of this deposit, which seemed to have substituted itself for the synovial membrane, was thin, of a brilliant whiteness, so firmly adhering that it could not be separated, and so hard that it could with difficulty be scraped off with the scalpel. The joints were no where anchylosed. The synovial membrane, lining the loose fatty substances in their cavity, exhibited some marks of inflammation.

Semi-indurated chalky substance was largely deposited in the sheaths of the tendons of the recti femoris muscles, and insinuated itself between the fibrous substance of the tendons themselves, so as to form, as it were, a part of the substance of the tendons.

A large concretion in a semi-indurated state was observed within one of these joints, included in the adipose mass.

On the outside of the fascia of the right forearm, a similar substance was found in the adipose membrane.

In the left hand, among the extensor tendons, a mass of harder chalky matter appeared, of which the apex had penetrated the skin. This apex sprung from a large base, extending itself within the sheath of the tendons.

Repulsion of Gout by Cold.—Adm. D., thirty-five years ago, when on his passage to the West-Indies, had an inflammation of the gouty kind in his knee, which followed an unusual course of turtle and claret given him for five or six weeks by the merchants of Bristol, while he was waiting to convoy their vessels. By the advice of a surgeon on board, he kept the part constantly wetted with cold Goulard's lotion. The shining redness, swelling, and pain, went entirely off in the course of twenty-four hours; and in about four or five days he was, while still on his passage to the West-Indies, seized with a violent cough, accompanied with fever and emaciation which were supposed to be consumptive, but from which he recovered in six weeks.

Case.—Mr. H., when about fifty years of age, ahd a gouty inflammation and pain in one knee for three or four days. On the fourth day he was advised to anoint the knee with cold oil, which he did, and found immediate ease, the pain however returning, he made use of the same application the same night, just before going to bed. Immediate ease was again obtained, but a sense of coldness occurred all up the same thigh. He went to sleep; but in five or six minutes was waked suddenly by a most violent and excruciating pain of the stomach, which was very difficultly relieved.

The gout being generally extended to the surface, is then relieved by the application of cold. But when deep seated, and the part not red, as in some states

of rheumatism, is relieved by warmth. So in Mrs. G. in the ankle, without redness or fever.

Relief of Gouty Tenderness of Muscles.—When the gout had seized my left knee and foot, it seemed to extend itself to the calf of the leg, which, however, was easy, when relaxed, but when stretched, as when I attempted to rest upon it, suffered excruciating pain. As I concluded that the symptoms arose from vascular fulness, it occurred to me that binding my leg tightly with handkerchiefs would afford me relief. The result answered my expectation. The pain immediately ceased.

The Effect of Heat in increasing Pain of the Gout.—At the time a fit was going off, and I was free from pain except on motion, I found the pain recommence, and gradually increase. This appeared to be owing merely to the rays of the sun which had then just begun to fall upon the part as I was sitting. On intercepting the rays, the pain immediately lessened, and soon entirely ceased. [April 1811.]

Salutary Effects of Blood-letting in Gout.—For a fortnight after I had begun to go out, which was on the 16th of January, 1811, after erysipelas faciei with acute fever, the passage of a nephritic calculus with great pain and black urine for a week, and the successive appearance of inflammatory gout in my left patella, left foot, left wrist, and right foot, had confined me to the house, and chiefly to my bed for

twenty-six days, I continued to have a pulse of 96 at night, with little taste for food, though my pulse was only 72 by day, and great restlessness at night, with heat of face and dry skin, aching limbs. The neighbourhood of the affected joints had some but inadequate œdematous swelling, and my urine was pale and copious, depositing no sediment whatever. In this state an attack of gout followed, accompanied with convulsions, as has been described in another place. In the course of that morning I had ten ounces of blood taken away. The blood had a pretty thick inflammatory crust. In an hour or two I became able to move my foot without much pain. At three o'clock P. M. a slight access of fever took place, which was immediately carried off by healthy perspiration. At nine, P. M. another accession occurred, which sweating followed in a few minutes. I immediately went to sleep, and waked only for half an hour during eleven hours. From that time I had no fever, and continued to sleep well; and what may appear extraordinary, the salutary œdematous swelling immediately began, and continued in the same manner as when the gout goes off quickly in the strongest constitution, at an early period of life.

Case.—There is a state which is very common to persons of different ages, who have had gout, and which is generally considered as one of the varieties of Atonic Gout. A patient who has lately had gout, continues to have a quick and more or less hard pulse. He has head-ach or vertigo, loss of appetite, and generally sickness and vomiting,

sometimes with purging, but, in the course of the attack, with occasional costiveness. His head is hot, his eyes often red, his sleep disturbed, and sometimes interrupted by startings of his limbs, and occasionally by a sense of suffocation, just as he is about to sleep. The tongue is in some degree dry and furred. In this state it is common to give cordials and stimulants, in order to throw out gout to the extremities. In consequence, the patient soon becomes worse, his head becomes more violently affected, delirium or convulsions supervene; and the patient, unless relieved by spontaneous hæmorrhage, dies, without any new appearance of articular inflammation.

In exactly such a case, before it had reached convulsions, or been treated with stimulants, but just as delirium had begun, I ordered sixteen ounces of blood to be taken from the arm of Mr. T., which was covered with a thick and firm, but uncupped crust of fibrine; and ten grains of Extractum Colocynthidis compos. to be given every two hours, till five or six large loose motions should be procured.

The bleeding almost immediately relieved the head; the patient slept extremely well, had five motions from eight pills; and the next day, according to his own account, was quite well. Some quickness of his pulse, however, still continued.

Case.—Mr. M., aged between fifty and sixty, who had for many years been subject to violent fits of inflammatory affection of the joints usually called gout, and who was scarcely ever free from more or less of that constitutional diathesis, by which many of his joints

had then been disabled, took the Eau Medicinale of Husson, which relieved his pain, but left him in a state of great bodily and mental debility and depression; and subject to paroxysms of the disorder, which were more frequent and less critical to the constitution than before. In the month of October 1811, he was so far recovered from a very long and debilitating fit, as to be able to take food with appetite, and go out, well clothed, on horseback. This soon produced a catarrh, which in a few days ended in another severe attack of inflammation in various joints, accompanied with a quick and strong pulse. His urine was, however, of the natural colour. In his left knee the pain and tenderness were so great, that merely putting his right hand out of bed much distressed him. By my advice ten ounces of blood were taken from the arm; and before the operation was well over, he was able to move the limb itself without pain. The blood exhibited all the appearances of what is called inflammation. By this evacuation, the pulse was much reduced in frequency and strength, and great general benefit was derived. Local inflammation, however, from time to time recurring, with occasional aggravation of fever, the blood-letting was twice repeated, and each time with the most sensible advantage. By the middle of November, Mr. M. began to ride out on horseback, and towards the end of it left Bath, with no other complaint than joints previously disorganized by former attacks of the same malady.

Case.—The late Earl H. had many years been subject to fits of what was called gout, and which

affected almost all his joints in quick succession, so as to confine him for several successive weeks to his bed or room, with excessive pain and violent fever. These attacks were sometimes evidently produced by exposure to cold while he rode on horseback, as he usually did at a slow pace, for some hours together, even in the depth of winter; and I have known it happen, that he, and the groom who attended him, have been both confined to their beds with this disease at the same time from the same cause.

In one attack, Lord H. laboured under a very strong and quick pulse, great heat, and all the marks of violent inflammatory affection; and it was distressing to witness the total inefficacy of the accredited means of that day in this and similar cases. After a few days wasted under the use of sudorifics and opiates, the inflammation extended itself first to the intercostal muscles, and then, in a slight degree, to the pleura, producing dyspnœa, cough, and expectoration streaked with blood. Under these circumstances I proposed bleeding; which was strenuously opposed by the family, first on account of the age of the patient, and next on the customary plea of gout. I, however, pointed out the cough, dyspnœa, and bloody expectoration; and the family submitted. One single bleeding from the arm removed the pleurisy, and so greatly alleviated all the other symptoms, that Lord H. himself suggested the repetition of the remedy. This, however, did not appear to me then necessary. The patient's recovery was much quicker than on former occasions.

Case.—Mr. P., aged seventy-four, had been for twenty years subject to gout, which produced little external redness or swelling, and little pain while he was at rest; but great pain when he in any degree exerted the joint which happened to be affected.

In the month of August 1812, he came to Bath, labouring under such an attack, chiefly in his insteps, which had begun in January preceding, and made him incapable of walking except for a short distance, and not without much suffering. The complaint was accompanied with a pulse which was strong, and between 80 and 90 in a minute. His appetite was, however, good, and he was moderately fat, free from indigestion, and otherwise in good health.

He used an open bath of about 94 degrees, with some reluctance on my part on account of the state of his pulse; for which reason small doses of antimony were given, and the internal exhibition of the Waters interdicted.

At the end of a fortnight the pain of the insteps on motion was much increased, and his pulse rose to 96, and was very full and hard.

With considerable difficulty I prevailed on him to have ten ounces of blood taken from the arm. The blood was covered with a thick crust of coagulated lymph puckered at the edges, and every part of the crassamentum, which bore a large proportion to the serum, was strong and cohesive.

Of this bleeding the result was, that in three hours he was able to walk with little pain or difficulty; and

when I saw him two days after, his pulse was soft, and only 72 in a minute.

Shortly afterwards he left Bath, with instructions to eat very little animal food, wholly to relinquish spirits and fermented liquors, and to lose more blood, if at the end of a few days any pain on motion should continue.

A Fit of the Gout cured by Bleeding.—Many years ago, I was sent for to attend my old fellow-collegian, Dr. B. He was a very free liver, conformably to the practice enforced by an eminent physician in the gout, with which Dr. B. had frequently, and in a very acute degree, been afflicted. I found him with a strong full pulse of 136 in a minute, and with all his limbs agonized with inflammation of the joints, which, though it had not disorganized them, utterly prevented his sleeping, and shook him with incessant tremors, almost to convulsion. From these sufferings which had been of several days' duration, he could obtain no ease but from the daily use of from 60 to 100 drops of tincture of opium. I proposed that he should be blooded. At this proposition he started with equal astonishment and horror, asserting that the Physician, to whom I have alluded, was so far from bleeding in the gout, that he would not employ that remedy even in pleurisy. After much hesitation, Dr. B., however, submitted. Twelve or fourteen ounces of blood were taken from the arm. At my visit the next day, I found Dr. B. up in his drawing-room. With an expression of much sur-

prise he told me that he had found immediate relief from the bleeding, and had been able to sleep the greatest part of the night without opium. His tremors were entirely gone; his pulse was under 80 in a minute, and he had no remains of his complaint, except some pain in moving his joints; which, however, was so slight, that he was able to quit Bath in four days, in tolerable health and good spirits.

AFFECTIONS OF THE HEAD.

Miscellaneous Remarks.

Determination to the Head.—The state of increased impetus common to the greater number of diseases, is conformable to the usual simplicity of nature.

Different ages are liable to different species of undue determinations; youth to those affecting the head, as nervous affections, &c.

Persons who are affected with scrofulous disposition in glands, are certainly most liable to excessive determination to the brain.

It is a curious evidence of the greater readiness of arterial determination of blood to the head than to other parts, that after general coldness, &c. the heat first commences about the head, and then gradually extends itself to more distant parts. That even exercise produces the same effect is clear from the effect of it, as well as of other causes, in producing sweating, which always begins about the head.

It is not to be wondered, that determination should most usually take place to the vessels of the head, when the action of the heart is increased beyond its

due bounds; because we find that the resistance through them to the passage of the blood is least. So we find that in palpitations, pain of distention is felt about the carotids and subclavians; and in diseases of the heart from ossifications, &c. and in various fatal diseases, when the pulse is lost in the extremities, it remains in the carotids. See Haller's Opuscula Pathologica, Obs. LII.

Determination to the head, producing nervous affections, or in fevers, does not always produce debility. On the contrary, when, in a certain degree, impairing general sensibility, it takes away the sense of pain, and, of course, the disposition to feel fatigue; both of which return or increase as the determination diminishes.

Any local disease, as of the heart, producing increased action, may, by inducing undue determination to the head, occasion disease in it, as in Mrs. S. J., Miss C., &c.

Supposing, for argument's sake, that the disposition to determination to the head arises from undue action of the heart, and this from undue nervous irritability, as the order of facts, still the more urgent symptoms depend on that impulse into the vessels of the brain, which certain remedies, as evacuants, sedatives, &c. will relieve. [1802.]

In what mode excessive determination of blood to the brain acts as a cause either of predisposition or excitement, we cannot positively decide. We may, however, from analogy, presume, that as the sensitive substance itself is secreted and disposed by the san-

guiferous system, so the faculties or powers of the whole, or separate parts of the organ, may be within certain limits proportioned to the exuberance of the sensitive furnished, either generally or locally, by the blood-vessels.

In case of *pain in the Head*, membranous headach, as in Mr. P., the temporal artery is uncommonly prominent to the sight, only during the fits of pain; the head at the same time is hot, and the feet are cold.

In cases in which there is pain of the head, with evident marks of increased determination of blood to that part, every systole of the heart often produces a momentary obfuscation of vision, which goes off during the diastole. [1815.]

Mr. A., who had a constant rushing sound in his left ear, found himself immediately relieved from it by compressing the facial artery where it passes before the ear.

In Mrs. P. the noise is only on the right side of the head, where the carotid is strong. The other side is well, and the carotid much weaker.

Dazzling, or corruscation before the eyes, like vertigo, appears to be an affection of the brain, connected with some effort to stimulate the stomach and alimentary canal to act in the expulsion of wind.

When I have had black specks before my eyes, with a sense of fulness in the head, I have perceived the specks to appear as the blood rushed forwards at each systole of the heart, and nearly or quite disappear at the diastole. [1816.]

In Mr. G., Mr. V., and a thousand others, a

total restlessness, and want of sleep, arise from increased fulness of the carotids, accompanied with heat of the forehead, chiefly coming on when lying down in bed at night.

It is a proof that delirium, even of typhus, is owing to increased impetus of blood in the head, that in Mr. O. S., and many others, when the face becomes suddenly flushed, and hot, which frequently happens, there is immediate agitation and alienation of mind, which, together with the heat, are always removed or relieved by the application of cold water or vinegar to the head.

One circumstance of increased impetus deserves to be noticed. The delirium is preceded by a pain in the head, but as the delirium comes on the pain ceases; though the impetus remains as before, or perhaps increases. Diminish in a slight degree the impetus, and you remove the delirium, and renew the pain. Diminish the impetus in a greater degree, and the frown on the forehead is relaxed, the features seem to open, and the pain entirely ceases.

In Mrs. F. a chronic pain in the back part of the head, and left side, especially about the cheek and eye, accompanied with heat of the parts, and a sensation of bursting there, is always relieved by an involuntary discharge of tears from that eye.

In Mr. S. and Rev. Mr. W., the first occasional disposition to apoplexy, or epilepsy, that is, stupor and heaviness alternating with restlessness, with more or less of mental alienation, was once nearly cured by bleeding, and by frequent purging. In both, as

well as in various hysterical patients, *crying* is frequent, and usually without tears, but with the corresponding actions of the diaphragm and intercostals.

Miss J. B. lost the noise in her head during faintishness from bleeding.

In Mr. P. one leech applied to one temple relieved that side of the head, but not the other. Indeed if there is hemicrania of an inflammatory kind, as in Mrs. P., which arises from an affection of one set of vessels only, there can be no reason why topical effects may not arise from topical remedies. [1808.]

In diseases of the head from local fulness, blood-letting enables the vessels of the part to recover their contractile power, and natural contraction; so that new supplies of blood in the system are properly and equally distributed. In answer to what people urge as an objection to blood-letting, that the quantity is soon made up again, therefore the operation cannot be finally efficacious.

Miss A. M., Oct. 17, with determination to the head. Her nose accustomed to bleed when she did not walk for a week; but never when she did walk.

[June 5, 1810.]

Sir D. S., subject to considerable determination to the head, was also apt after tea to be affected with loss of voice; for which he was advised to substitute coffee for tea. He did so, and in consequence lost the symptom.

In Mr. S., Æt. 64, accustomed to violent affections of the head, vertigo, or pain, the head is always relieved when œdematous swellings, without heat or

inflammation, come on in the legs and feet. When the swelling goes off, the head becomes very bad.

In answer to the theory which attributes affections of the head to the fulness of the system of the vena portarum, it may be remarked, that a man shall have violent affections of the head, and shall be relieved by the coming on of a pile which only swells, and does not discharge; and when that pile goes back, shall have the head again affected. Now the pile being only the evidence of the greater fulness of the system of the cava inferior, or vena portarum, should increase the symptoms according to the former supposition. On the theory of change of determination or fulness, the whole is easy and simple.

In Lady A. H., Nov. 1808, who had had epilepsy, suddenly there had come on with violent pain in the head, a stuffing of the nose as from cold, going off by blood-letting. The blood greatly inflamed; without other marks of catarrh, except some watering of eyes. No cough before or after. Some fever. These were symptoms of determination to the head.—So, also, in Mr. P., a great stuffing of the nose occurred before, during the time of, and for many days after, the fit, though confined to his bed from the last fit, and no marks whatever of catarrh from cold. Dec. 1808.

In Miss M. and Mrs. S., both much subject to violent nervous symptoms, and the latter, though extremely thin, dying of apoplexy with hemiplegia, the same thing often occurred; in both from going into a hot room

Modifications of Affection of Brain.—Mr. G., stout and rather fat, aged fifty, in the month of October was suddenly seized with a stupor in the left hand and foot, accompanied with a sensation of pricking and tingling, but with no affection of the head. These symptoms did not continue above two minutes. About a week afterwards, at four in the morning, while in bed, and awake, he was suddenly affected with a more violent attack of the same kind all down his side, in which the parts were numbed and tingling, but not deprived of the power of motion, though it was impaired. His spirits were greatly depressed, but the head was not sensibly affected. At an indefinite time afterwards, he began to suffer what he calls a giddiness or want of clearness in the back of his head on the same side, together with an incapacity of seeing more than half an object, a cloud occupying the object on the right side of the left eye. These symptoms still continue in a less degree; but the same affection of vision does not occur, if he shuts the left eye.

[June 21, 1812.]

Delirium, Nervous Complaints, &c. being affections of the brain, produced by *various causes* evidently acting immediately on that organ, and, on *other occasions*, by increased momentum of blood, causing inflammation, &c. we may fairly presume that the same diseases always arise from an affection of that organ.

Now if we observe that delirium, and other derangements of the rational faculty, occur most frequently to persons accustomed not only to causes of general corporeal indisposition, as hard drinking,

a sedentary life, &c.; but also to those who have yielded to the indulgence of bad habits, as anger, the gratification of all other immediate desires, and the avoidance of every act which produces the slightest present inconvenience, we have fair reason to conclude that all these latter causes, like the former, do in reality act on the brain, &c. predisposing it to be affected by exciting causes, in the same manner. Hence comes the danger to the head, after lying in, to women who have indulged one train of thought almost to methodistical delirium during life, who have taken no exercise, and have otherwise practised positive and negative self-indulgence. So far as to the brain.

So also as to the danger of diseases in which the heart performs a leading part, as fevers, &c.; in which its powers are more apt to fail from predisposition in over indulged and indolent persons than others.

This order should, however, be inverted, because if it can be shewn that the principle is true with regard to the heart, it follows that it is probably true in the brain. So of all other parts relatively to their several functions, and their symptoms during disease.

Necessity of certain Determination to the healthy Function of the Brain.—I. When a certain degree of impulse or momentum of blood takes place in the vessels of the brain, a due excitement, excitability, and balance occur in the external and internal senses, and in the conscious (voluntary) and automatic (tone) motions of voluntary muscles.

II. If the impulse is somewhat greater, general sensibility is increased, and voluntary power of muscles diminished.

III. Go on still farther, and one of two things happens.

1st. Either partial sensibility increases, and general diminishes, and then voluntary power of muscles increases in a certain proportion to the latter; or

2dly. General sensibility diminishes, and general voluntary power of muscles increases.

These states II. and III. (1) (2), constitute the usual, but not all the states of insanity; because, perhaps, false perceptions, not conclusions of reasoning, or errors of judgment, but actual impressions on the brain, may occur from increased impulse from determination of blood.

And, perhaps, all these states may arise from other stimuli, as exostoses, ossification, tumors, &c., acting on the brain; but quere, do they not themselves give occasion to temporary increased determination of blood to the part, or at least concur with it? because in such cases, and in epilepsy from similar causes, the paroxysm is not always permanent. See the remarkable case of Mr. W., and Miss F. May not these exostoses, &c., be effects of long continued determination, and in no degree the causes of epilepsy, &c.?

It seems as if in the examples which I have pointed out, muscular strength is proportioned, in a certain degree, to diminution of general or nearly general sensibility.

It is the same locally. What is called weakness, is

in fact usually pain or uneasiness in exertion. Thus in chronic rheumatism, &c., a man says his limb is weak, when, on analysing his feelings, and inquiring more minutely, you will find that it is nothing more than that exertion produces such a degree of uneasiness as indisposes him, rather than incapacitates him, for exertion. This, indeed, is often in such cases obvious; for the disease shall be in the joint or capsular ligament, or cellular membrane, which is merely passive; and the muscles, which are the agents, shall be free from disease, and retain their full powers, and yet the man shall assert that he is weak. Give, however, a motive which shall overcome pain, as setting his house on fire, and he shall no longer feel weakness.

Even in muscles themselves, strength or the capacity of exertion seems usually limited by the sensation of the part. The first symptom of lassitude or weakness is an uneasy feeling in exertion, which indisposes the person to continue it. Rest takes away that uneasiness, and exactly in proportion as it does so, adapts or capacitates the part for renewed exertion. Whatever diminishes sensibility, whether generally or locally, does the same. Thus wine, opium, and tobacco, are well known to produce the first effect, and the abstraction of heat, by the application to the part of cold air or cold water, to produce the latter.

Even in the case of faintness caused by bleeding, the man who drops his arm from what is called weakness, is, as I have often myself felt, impelled to do so by an undescribable and irresistible sense of

uneasiness in the arm itself, which ceases to be felt when the arm is suffered to repose itself.

Cases.—That the degree of distention in the carotid artery is not to be judged of by the fulness and strength of the temporal, will appear in many instances to those who are long accustomed to such observations. Of this fact the following is an example out of many others which I could produce. Mr. Y., aged about forty-two, muscular, and of a full habit, a temperate liver, long subject to dyspepsia, and, on account of an habitual redness of the face, supposed, as it appeared to me unjustly, to labour under disease of the liver, was affected with slight hemiplegia, which was much aggravated by mercurial frictions, intended to relieve the imaginary hepatic malady. He also suffered much from hysterical attacks, and great mental depression. His urine was in large quantity and pale. In this patient the pulsation of the left carotid was extremely full and strong, while that of the left temporal was scarcely to be felt. On the other hand, the pulsation of the right carotid was weaker than in the left, while the right temporal was visible for a great length, and its pulsation was uncommonly large and strong.

Disease of Brain; one Modification.—Sir J. G. Bart., a tall, strong built man, between fifty and sixty years of age, had some years before suffered slight fits of the gout, which had now for several years ceased to recur. He lived temperately, and rode on horseback, but neglected the more efficacious exercise of walking, under the usual excuse that it fatigued him. He

became subject to frequent sensations of pain or uneasines about the head, and occasional vertigo, and was subject to costiveness, though without any clear symptoms of dyspepsia. On the 27th of July, 1812, while walking in the street, he was suddenly seized with an affection of the head, which he could not then describe. Unable to stand without support, with some difficulty he reached a neighbouring shop. Nearly two hours elapsed before I saw him. His speech was extremely inarticulate, and it was not till afterwards that I learned from him that he had been affected with a sort of glimmering before his eyes, accompanied with giddiness, and a great obfuscation of vision, and that he attributed this attack to his having taken some opening medicine, which had imperfectly operated. He was free from sickness, and had no symptoms of hemiplegia ; and as he swallowed without difficulty, it seemed as if the inability to speak arose more from slowness of conception, and confusion of ideas, than from any inability to move his tongue and other organs of speech.

He was copiously blooded, and freely purged. The symptoms gradually declined; but it was not till the middle of August, that his recollection and vision were fully restored. There was no dilatation of the pupils, or any insensibility to light. On the contrary, strong light was painful to him. He had little or no headach, and his pulse throughout, was in a natural state.

Determination to Head.—Mrs. G., aged between fifty and sixty, in the year 1801, laboured under a

violent vomiting of blood, from which she with difficulty recovered. She has now twice or thrice a week for many weeks been affected with vertigo, which has usually continued for two or three hours, and at the end of the first hour has been followed by sickness and vomiting, which have for several hours afterwards been renewed, whenever she has taken any food. Her bowels are usually much bound. Oranges, strawberries, and other soft fruits do not appear to disagree with her stomach. Her appetite is good, and no flatulent food aggravates or seems to produce the giddiness, though after certain kinds of food her stomach is affected by a sense of weight. For this complaint she has without relief been purged; and, on the presumption of its originating in her stomach, has been ordered meat four times a day. Feet cold. Pulse of natural quickness; full in the radial arteries, and enormously full and hard in the carotids. Let her diet be entirely changed, meat being eaten once a day and then sparingly; a moderate proportion of fruit and vegetables forming part of her food, malt liquor being wholly avoided, and only one glass of wine drank every day. Let twelve ounces of blood be taken from the nape of the neck by cupping, and Aloës daily taken so as to keep the bowels habitually open; and let exercise in walking be constantly employed as far as her strength will permit.

The effect of this first bleeding was immediately to relieve her head in such a degree, that it was difficult to prevail on her to continue any farther remedies. Occasional, though slighter attacks of the vertigo,

required a repetition of similar means, which at the end of a few weeks were no longer necessary.

[Jan. 27, 1813.]

Violent Spasmodic Affections, and Death from Mercury.—Mrs. C., aged forty-five, of spare and thin habit, a widow, who has had three children, and who menstruated a fortnight ago, fourteen days after the preceding period, was affected in the spring, in the midst of good health, with an herpetic eruption on the left arm, for which she took mercurials. After she had continued them for a fortnight, she fell into a violent salivation, which lasted a month, and under which the eruption increased. During the salivation, a pain came on in her head, and has continued ever since, especially on the left side, sometimes accompanied with swelling and soreness about the head and neck, but without external inflammation, and constantly attended with fever and loss of appetite, under which she has gradually been emaciated. About three weeks ago her head became worse, with occasional violent convulsive movements of it, so as to prevent her from lying down. At the end of a week, her head growing better, the complaint was transferred to the left shoulder, which became affected with violent pain and occasional convulsive twitchings, but without redness or swelling. The least motion or touch from the elbow to the shoulder puts her into agonizing pain, and even a fly or her hair touching her face or arm seems, to use her own expression, "to kill her;" and yet a harder touch or pressure does not affect her. All noise agitates her, and the

least shaking or treading in the room aggravates her sufferings. Wherever the pain is, there is a constant sensation of tickling. The arm beneath is not dead, but constantly drawn inwards by the flexure of the elbow, and there is still on it some herpetic eruption. Her head continues much as it was, without giddiness, and she rarely has any sleep. Bowels regularly open. Appetite very bad. Her stomach, which, till this complaint was perfectly well, is affected with frequent eructations of wind, sickness, and straining, but never so as to vomit. The sterno-mastoid and other muscles about the neck and throat, as well as those of the face, especially on the left side, are so rigid and stiff, that she can scarcely open her mouth, and cannot put out her tongue. For the same reason she is unable to swallow solids, and her speech is thick and difficult. Pulse 84, full and strong: that in the right carotid stronger than natural; though it is difficult to feel it, from the rigid contraction of the sterno-mastoid muscle.

No other parts of her body are affected.

This patient was by my direction blooded, purged, and took effervescing saline medicines with squill. She was at a distance from Bath, and I visited her no more; but I learned that a few days after, just as she got up in the morning, she was seized with a violent convulsion, which made her cry out and express a wish for death; shortly after which she expired.

[Aug. 23d, 1806.]

Affections of the Brain from Mercury.—Mrs. B., a native of Spain, aged thirty-one, began four years

ago to suffer pain about the region of the stomach and right hypochondrium, extending round towards the back. The pain attacked her in frequent fits, more especially during pregnancy, which occurred five times subsequently to the beginning of these attacks, and all of which, except the last but one, which was sixteen months ago, ended in miscarriages. The last miscarriage was about the latter end of September. Almost every attack of pain was followed by jaundice; but, exclusively of these fits, her health was extremely good.

Under the notion of diseased liver, Mrs. B. was treated with mercurials, which produced a much more violent effect than was designed or expected by the Physicians who attended her; for though these remedies were administered only five or six days, ptyalism commenced about the middle of October last, and continued for three months, so that for a month her mouth was so affected that she was unable to speak, and conversed only by signs; her flesh was also greatly reduced, and her strength was so impaired, that she fainted in the act of being put into a warm bath. During this period there was no disorder of the head. The fits of pain were often followed by the evacuation of biliary concretions; of which she passed five on the 17th of November, one on the 17th of December, one on the 13th of January, 1813; and a large one about the middle of February. They were all angular, and approaching towards a cubical form.

She arrived at Bath on the 16th of March, 1813, much reduced, affected with frequent sickness, and

labouring under occasional attacks of the last described malady, together with an almost constant pain in the lower bowels, which had begun on her journey. A moderate use of the Bath Waters, only for a few days, disagreed with her; but from an adequate and constant exhibition of Rhubarb and Soda, under the care of Mr. Tudor and Dr. Haygarth, she obtained considerable relief. Her appetite was good, and she went out, even to places of public amusement; but the sickness and pain in the bowels continued to recur in a greater or less degree, and in order to relieve the latter, she frequently in private took laudanum and wine.

The attacks of sickness, accompanied with vomiting, sometimes occurred even when there was no appearance of any peculiar irritation from the biliary calculi.

On the 10th of April, at eleven o'clock at night, she was suddenly seized with a fit, in which her eyes rolled, her jaws and limbs became rigid, and continued so for three or four minutes, after which she suffered a state of sopor for half an hour, and then recovered her senses, without the least consciousness of what had befallen her.

On the 11th, 12th, 13th, 14th, 24th, and 28th, she had two or three fits daily, some of them attended with foaming at the mouth.

Small doses of Barbadoes Alöes, with effervescing Citrate of Potash, were given twice or thrice a day. These remedies kept the bowels gently but effectually open, and removed the sickness; which, however,

after some days returned, and continued to recur more or less till the termination of life.

In the intervals of some of the first fits, she complained of a great deal of pain all over her head. In their progress, she fell into a sort of maniacal state, which commenced about the 20th of April, and in which she exhibited a preternatural eagerness of manner, with a frequent expression of a wish to get up and leave her room, though absolutely incapable from weakness.

For some of the last days, the part of her head, to which she referred her pain, was the occiput.

The pulse in general was somewhat quicker than natural; but for five days previously to her death, it was under 60, and on the day of her death 52, regular and moderately full.

The day before she died, she complained that she could scarcely see with her right eye; and that pupil, though farthest from the light, was more open than in the other eye. This continued till her death, which took place, in the quietest manner, on the 6th of May.

She was opened on the 7th, by Mr. Tudor, whose account of the dissection follows, with little alteration.

On opening the cranium, the vesseis of the dura mater were rather more turgid with blood than usual. The brain was of a very firm and natural texture, free from those bloody points which are commonly observed on the surface of its sections, and shewing no diseased appearance until we came to the cerebellum, the posterior lobes of which, at the inferior points, where they approach the medulla oblongata, were of a dark

livid colour to the circumference of a sixpence on each side; the smooth surface of the pia mater being lost and blended with that of the substance of the cerebellum, so as almost to give the appearance of an ulcerated surface. The right lateral ventricle contained somewhat more than a tea-spoonful of serous fluid.

In the abdomen, the liver was found in a perfectly healthy state, but the gall-bladder was contracted, and considerably thickened, containing four gall-stones of about the size of a small hazel nut, and two or three smaller ones. One of the former was in the act of passing from the gall-bladder into the ductus cysticus. The gall-bladder had in it no bile, but some puriform fluid, which had been secreted from its internal coat by irritation; there being no ulceration, and the calculi being very angular and irregular in shape.

In different parts of the intestines there were considerable appearances of disease. In one part of the ilium, to the extent of six or eight inches in length, the coats were not only of a dark colour from turgid vessels, but interspersed with livid spots throughout their substance; and the internal surface shewed equal marks of inflammation, and even effusion between the coats. This state occurred in a less degree in two or three other parts of the same intestine.

The uterus was in a natural, healthy state; but the ovaria on each side were enlarged, and contained numerous round or oval cysts containing fluid, from the size of a pea to that of a horse-bean. A similar hydatid sprung from the right fallopian tube.

Sick Headach removed by Muscular Exercise.—Mr. M. aged twenty-two, small, light, and well formed, was accustomed, when a boy, to violent headachs, affecting chiefly the forehead, frequently recurring, and sometimes continuing for a week together. They were usually accompanied with some degree of nausea, not amounting to vomiting. His habit was costive; but he had never any symptoms of dyspepsia after any particular kind of food or drink. At an early age he learned to dance, and afterwards followed the profession of a dancing master; in consequence of which his headachs began to diminish, so that now he has had but one attack for more than a year and a half. He always finds more disposition to these attacks during the vacations, when, of course, he uses little exercise; but when a headach has threatened him, he has often carried it off by walking three or four hours. His bowels still continue confined; though he takes care to counteract this state by aperients; and he does not find much difference in that respect, whether he uses exercise or not. He remains free from all symptoms of indigestion.

Sick Headach.—Mr. S. used to have giddiness and motion before his eyes in the morning, followed in ten minutes by pains, which used to last the whole day, and never went off till after sleep at night. After the coming on of headach, he soon vomited up some acid stuff. If he drank tea before the headach came on, he was sure to be sick; but not if he took coffee. This affection used to occur once a week, lasting for two days, and was cured by

two copious bleedings. The habit was at the same time costive. [Jan. 9, 1808.]

Preternatural Slowness of Pulse from Concussion of the Brain, with no other mark of Cerebral Disease.—A Lady, about fifty years of age, slipped down in the street near her own house, and falling on her head, received a deep wound in the scalp. The accident was followed neither by sickness, pain in the head, nor vertigo, nor were the mental faculties impaired; and the cranium itself appeared to have suffered no injury. The pulse, however, which in health, both before and after, was 72 in a minute, was reduced to somewhat more than 40, and continued in that state for full three weeks.

Various disorders from pressure on the Medulla Oblongata.—Mr. W., aged about forty, of the middle size, with a large head and short neck, was always temperate and for the most part healthy, and accustomed to great exercise. Seven or eight years ago, after some giddiness, but no headach or any other indisposition, there came out boils about the head and neck; and the same succession of symptoms was repeated three succeeding years.

In September, 1796, he had a fall from his horse, which produced no immediate affection of his head, but a pain and soreness of the loins, which prevented his walking. In four or five days he recovered; but afterwards, when riding in a carriage or on a trotting horse, he was subject to pain across the bowels, striking through to the loins, accompanied with some

lightness and giddiness of the head, on which account he was obliged to give up his phaeton.

At the latter end of the year 1799, he was in good condition as to flesh, his appetite was strong, and he was free from thirst. He had great imbecility of attention, so that he could neither read nor attend to reading, yet spoke tolerably well, so as not to be at a loss for words, though slowly, and sometimes inarticulately. He had no difficulty of deglutition. His sleep was uncertain as to period and duration; but while he slept he was quiet. He laboured under great agitation of spirits, and always on waking apprehended that he should destroy himself, but greatly dreaded, rather than wished, that event. He had no giddiness, but occasionally a throbbing pain in his temples; no defective or false sensation in any part. There was, however, in his hands some weakness or catching on exertion, though without any visible spasmodic motions. His legs had been at times, for five or six weeks, rigid and straitened, so that he could not bend his knees, or put his feet to the ground while sitting. At other times, while in that position, he could move his legs perfectly well, but could not support his body on them, much less at any time walk. The muscles were firm and hard, and had not shrunk. He was very costive, had frequent irritation to make water at night, and then some difficulty in retaining it. The urine varied in colour, having, during the stronger fits of spasmodic contraction, a copious pink coloured sediment. Feet warm; forehead cool; cheeks not flushed. Pulse 84, and

regular, but hard. The carotids and temporal arteries appeared considerably dilated.

The variety of fruitless remedies which I employed for this gentleman, during an attendance of several weeks, it is unnecessary to specify; but I cannot avoid relating a most singular effect, which followed a natural constitutional effort.

About the 26th of November he was seized with a discharge of blood from the nose, which continued through the night and part of the next day, amounting altogether to full two pints. The spasms in his legs became relaxed, but, through the day, he felt himself languid and faint. On the night of the 27th he slept soundly, passing, however, involuntarily under him several loose offensive stools, which were black, probably from the blood which he had swallowed from his nose. He woke on the morning of the 28th without any of his usual feeling of misery, and at ten o'clock, when his urine used always to be as pale as water, it was high-coloured. He passed the day without any rigidity of the muscles, his pulse being 76 in a minute, and soft; slept well, without any disturbance from motions, but, when he awoke, had a slight return of agitation and rigidity, which soon went off. In the course of that day, while sitting at his window, amused by some object which caught his attention, he suddenly got up by himself, and, after having stood for some time leaning on the window, and looking out of it, quietly seated himself down again in his chair.

As this had been for six months the first, so I

believe it was the last, exertion of the kind, which he ever made during his life; and he soon relapsed into his former state.

Impressed with the extraordinary effect of this hæmorrhage on all Mr. W.'s symptoms, whether mental or bodily, I attempted to imitate so beneficial a process; but the tender apprehensions of his friends precluded any promising extent of a remedy, which, when moderately employed, did not, I acknowledge, produce effects affording any very flattering anticipation of benefit from a more liberal use.

Shortly after this period, Mr. W. left Bath; and no opportunity occurred of my learning the course of symptoms till his death, which happened about the 22d of January, 1802.

His head was opened January 23d, 1802, by Mr. Carlisle, in the presence of Sir Walter Farquhar and Dr. Baillie.

The common coverings of the brain were in a healthy state. The lateral ventricles were dilated to twice their natural size, and contained a quantity of watery fluid. The arteries and veins on the surface, as well as those through the cerebrum, were in a natural state, except a slight degree of ossification in the branches of the circulus arteriosus. The different parts of the substance of the cerebrum, except those already mentioned, were in the ordinary state. The pons varolii was one-third smaller than it is usually found, and softer in its texture. At this part also, between this body and the dura mater lining the skull, a fluid was found, which had membranes dis-

persed through it, denoting a certain degree of permanency in its situation there. The left vertebral artery, rising up to form with its fellow the basilar artery, was dilated to twice the diameter of the right. Within the opening at the basis of the skull, where the spinal marrow descends into the canal formed by the vertebræ, a projecting bone was observed, which proved to be the tooth-like process of the second vertebræ. This projection narrowed the capacity of this cavity, and had evidently pressed on the pons varolii. The membrane enveloping this enlarged portion of bone, as well as the ligamentous substance in more immediate contact with the bone, were in a diseased state, somewhat like those parts which have for a long time suffered chronic inflammation.

Determination to the Brain, &c.—In the early part of life, M. L., Esq. had sores in his arms and legs, which disappeared at the age of fourteen or fifteen. He then enjoyed good health for many years. He led a sedentary life, interposing, however, at times violent exercise in shooting. This continued with habitual costiveness, occasionally interrupted by violent purgings for months together, which it was difficult to remove till within these three years and a half. He had lived very freely, but about that period marrying a young wife, became more temperate as to drinking and late hours. In September 1804, he had a violent pain in his forehead, with stupor, which were carried off by copious bleeding. After this he wore worsted stockings, which produced a painful itching on the skin, with some eruption, which has ever since re-

turned when he has worn worsted next the skin. It went off usually when he changed worsted for cotton, and he has not felt it when under low diet, when much bled, or under purging fits. Has not had more than two attacks of purging within these three years and a half; in the summer of 1807, and the following winter. For the first there was no assignable cause, except going without drawers; and the last was induced by calomel, which he took by mistake for compound mercurial pill, in order to carry off the irritation of the skin. The purging removed the cutaneous eruption, but continued itself for a fortnight or more without pain, though on former occasions the bowels were considerably pained. He has lately been more subject than formerly to inflammatory colds.

Mr. L.'s health continued good till Sept. 1808, taking a good deal of exercise, when he was seized with stupor and pain in the forehead, returning frequently, and occasionally attended with giddiness. When the symptoms were somewhat abated from bleeding and blistering, without sufficient attention to diet, he began to feel some numbness, accompanied with weakness in the flexor and extensor muscles of the two small fingers, first of the right, and afterwards, also, of the left hand, accompanied with tinglings and occasional twitchings of those fingers. In October, he began to have some sense of weight and diminution of sensibility, and mobility of feet, which increased till the 2d or 3d of December, when one side of the head began to be violently affected with pain, which went to the other side of the head, with increase of

weakness in the hands. During this time he became incapable of long continued serious attention; which diminished in December; but he is still incapable of long deep attention, without his head being much affected, at first with dizziness, so as not to see the letters if reading, and afterwards a pain, then vertigo. All more or less. At first, walking almost immediately produced vertigo, and a weight in the feet; now he can walk more. Pulse has been usually 72 of late; but formerly was quicker. There is a great fulness and beating of the carotids, and the pulse is generally full. Feet apt to be hot, and not cold till after many bleedings. Has drank no wine or other fermented liquor, eaten no animal food. Thinks that the balancing and straddling in walking is not from incapacity to direct the muscles, but from the attempt to counteract the effects of vertigo. Finds acids sometimes disagree with his stomach, and produce the purging. At first slept none for several weeks, but of late has slept well.

Since he has been here he has been bled with six leeches, and taken the saline mixture effervescing, with squill 4ter. in die. It has now purged him, so that he has taken it only once to day. The feeling of indisposition in the head is a pain over the brows, and chiefly on the right side of the crown of the head, passing to the brow and to the ear, which is often relieved by pressing the hand upon it hard, but previously it seemed to have produced, for half an hour, violent pain as it were under the skull. I found yesterday, May 17, that pressing the carotid

artery on that side considerably relieved it, even for some seconds after the pressure was removed, though it again returned. Since he has been here, his pulse has generally been about 80 and full; the weather, however, is intolerably hot. Tongue clean. Appetite good. No sickness. Not used to drink above two-thirds of a pint of port daily. Urine natural colour.

The following directions were given to Mr. L. on his leaving Bath, May 19, 1809.

When I attend to the past circumstances of Mr. L.'s constitution, I see indisputable evidence of a long struggle to expel superfluities, and restore the proper balance of the circulation. In this light I view the diarrhœa with which he has been so frequently affected, and which he has taken so much pains to counteract. His present complaint certainly arises from an excessive fulness in the vessels of the brain, which, stimulating in an excessive degree the medullary substance, produces in the head the various symptoms of pain, weight, fulness, ringing, watchfulness, dimness of sight, vertigo, incapacity of attention; and in the limbs numbness, automatic motions, and a certain degree of disobedience to what is commonly called the will. So far as it appears to me, we are possessed of no indications under which we can apply remedies to the part which is acted on, that is the medullary substance of the brain itself, while, on the contrary, the vascular system is very much under our controul.

In order to abate vascular fulness, I recommend the strictest abstinence from every kind of animal

food, and from all spirits and fermented liquors. Error may, however, be committed with regard to the use of vegetables themselves, and those intermediate substances milk and butter, which I have known to produce in a short time excessive obesity. Even these articles, therefore, should be eaten in smaller quantities than appetite demands. Should be well chewed, and slowly swallowed. It would be well to avoid suppers, much butter, or sugar, pastry, rich puddings, creams, chocolate, and perhaps with another view, salads, pickles, and green and strong tea. Fruit and acids in general should be regulated according to their effect on the bowels; but I myself do not apprehend any bad consequences from a *moderate* state of laxity; on the contrary, believe that it would greatly tend to relieve the more important part of Mr. L.'s complaints. Especial care should, indeed, be at all times taken to prevent costiveness, and without this precaution all other means would be ineffectually administered.

Exercise is another point essentially necessary to recovery. I do not speak of gestation, which may have great power on the agent, but which I know by experience, to have little or none on the patient. The exertion to which alone I give the name of exercise, is that of the body by means of its own muscles. To this exertion Mr. L. should gradually accustom himself, notwithstanding present inconveniences, by walking gently every day, during the cooler hours, as far as his strength will permit. In this method he will be able, by degrees, to extend his

exertions much beyond his present expectations, and will in the most natural and powerful manner restore that equal balance of circulation, together with all its consequences, which is absolutely essential to health. It would much contribute to this effect, if he were to add to this exercise that of the arm, first, in swinging light weights, and afterwards in the habitual performance of the manual exercise with a firelock. He should go to bed and rise early, and keep his feet warm and dry. Venus rarius colatur.

With regard to remedies, six leeches should be applied to the temples once in eight or ten days, without waiting for any urgent necessity; though such a necessity would at any time demand their immediate use out of the regular period.

The mixture,

℞ Kali supercarbonati ʒiiss.
Sacch. purif. ʒij.
Scillæ radicis recentis ad ʒss. adde.
Aquæ fontanæ ℥vj. Sum⁺. cochl. duo ampla ter die ē Succi Limonis recentis cochl. amplo uno inter efferv.)

may be taken, as it shall be found to agree with the bowels, either with or without the squills, though that remedy has great power in counteracting undue determination of blood to the vessels of the head.

After three or four leechings, a shower bath, consisting of one gallon of boiling water mixed with from three to five of cold, should be used thrice a week before breakfast; and when the weather is become

cold for that remedy, a small blister should be kept perpetually discharging on the crown of the head.

The following is Dr. Parry's reply to a Letter from the above Gentleman, complaining that the measures recommended had not been as effectual as be had expected:

"To M. L. Esq.

"Dear Sir, *Nov.* 5, 1809.

"I most unfeignedly sympathize with you in your bodily sufferings; and if I cannot partake of the despair which your letter expresses, it is because I have seen complaints like yours a hundred times cured, after having existed during a much longer period.

"The account which you give me of the effect of the application of leeches, is far from being unsatisfactory. They appear for a while to relieve your head; and the pains in the limbs which follow their use, shew that they actually, for a time, change the morbid impulse of the blood to the inferior parts. That any evil arises to the constitution from their frequent application, I have never seen. In persons much more weak than you, I have often known from one hundred to three hundred employed in the course of one or two years, produce no mischief, but the most salutary effects. That they make themselves necessary, is certainly only remotely true. Whatever removes any state of constitution unfavourable to sanguification, will doubtless increase blood, whether that state consist in insufficient appetite, or defective powers of assimilation. Since, however, nil dat quod non habet, it will be for the patient to obviate the

inconvenience by a proper adjustment of the food, with regard to both quality and quantity. A regulation of this kind I have already proposed, and you, I find, have duly observed, if you have taken care to restrain the quantity of your food within the limits of your appetite, and to eat it very slowly. I think I have before discussed with you the subject of purging. To me it appears evident that the complaint under which you formerly laboured, was a salutary effort of the constitution, which, if not unduly checked, might have prevented subsequent maladies. I have therefore, not only from this circumstance, but from general experience, an expectation of much benefit from the use of purgatives in your case. The effect which you apprehend of an uncontroulable diarrhœa from one or two doses of purging physic, is what I have never once witnessed during a practical observation of medicine of between thirty and forty years. I would therefore strongly recommend to you to try two grains of calomel at night, and a dose of infusion and tincture of senna the following morning, and to repeat this remedy after the lapse of a week, employing in the mean while no other medicine, except the Scots Pills, should the state of the bowels require their use. By these means you will in a fortnight discover how far it may be necessary to repeat the leeches, and at what interval. Every one must have seen the most beneficial consequences from this sort of process in diseases of the head. A lady, nearly eighty years of age, living only a few doors from me, was continually subject to the most alarming

attacks of this nature. I recommended to her to keep her bowels habitually open, and more especially to take once a week calomel at night, and a strong aperient the following morning. This she has done with little variation for some years, and has never since had any return of her complaint. If you find no evil from the purgative, it should be repeated for several successive weeks; and if some habitual diarrhœa should come on, it will probably act as an effectual remedy for your head, and the nervous complaints which spring from it.

"In the mean while, I would advise you to employ, without fear, the leeches, as far as they may be required for your relief. I confess that I place little reliance on the blister. If it act as a stimulus on the arterial system in general, it will have somewhat of the bad effects of other stimuli. If the shower bath, at 32 degrees, is either inconvenient or injurious, the head should be frequently washed with cold water.

"I am happy to hear that you are able to take more exercise. Let me intreat you to persevere in that most essential of all remedies; and continually to increase it to the utmost limits of your strength. Take care at the same time to keep your feet warm and perfectly dry; and if you become cold, never approach a fire when you first return home. Above all look with confidence to the recovery of a comfortable share of health; and persevere in the requisite means, although permanent benefit may not occur so soon as you might from theory have expected."

Hydrocephalus Internus, and other Diseases of Children.—Children are more especially liable to this disease, and also to convulsive fits, and eruptions about the head, and inflammations with discharges from the ears; all of which arise from that disposition of blood which by natural constitution goes most to the head of the fœtus, and so on gradually lessening to puberty and full growth. The formation and protrusion of the teeth at these periods is an exciting cause of many of these maladies. Afterwards, other parts, and their functions, are successively evolved, and corresponding maladies produced.

Hydrocephalus, &c. will cause light to produce painful impression on the eye, while at the same time the light no longer makes the iris contract.

It does not follow that in disorders of the brain, as, for example, insanity, fulness of the vessels should always accompany a preternatural accumulation of water in the ventricles. In fact, the contrary is likely to happen, from the evacuation of the vessels; and we see it actually happen in hydro thorax and other dropsies, beginning with inflammation, but of which no signs remain after the fluid has been copiously effused.

Does the vomiting in hydrocephalus internus usually cease, when effusion comes on? In Miss C., aged four years and a half, symptoms of hydrocephalus began about the twelfth day of a fever of the epidemic kind, chiefly affecting the bowels, but in which vomiting was almost incessant. On the sixteenth day, the vomiting ceased, after having been four days lessened;

and on the sixteenth, I first observed irregular direction of the pupils.

In Miss H., about three years and a half old, on the eighteenth day of hydrocephalus internus, the pupils being quite dilated and immoveable, but a power of swallowing still remaining, the pulse was 192, and very small and weak. In the circumstances of respiration there was something very extraordinary. When reckoned from the movements either of the thorax or diaphragm, the respirations were 36 in a minute, and tolerably regular; but it was extremely curious that the actions of the thorax and diaphragm were performed alternately, so that the actual respirations were 72 in a minute, those by the diaphragm being the strongest.

In Miss C. L., aged thirteen, who died of hydrocephalus internus, there had been no sickness; throughout the whole disease the urine had been sufficient, varying in colour, but never with lateritious sediment. She never had had convulsions.

Hydrocephalus Externus, from Serum.—I have never seen this disease, without internus; and that fluid between the membranes was comparatively nothing. When I had expected to find it, as in a child Mr. Norman opened in Walcot-street, the disease was internus; and other similar ones are mentioned by authors.

Case of Convulsions, with Hydrocephalus.—Master W., an infant with pertussis, incessant convulsions, and enormously enlarged head with open sutures,

was cured by rubbing into the head, by mistake, within twenty-four hours, an ounce of strong mercurial ointment. He is now, fourteen or fifteen years afterwards, living, healthy, and strong.

Various Disease of the Brain.—Case.—Mary M'M., aged seven years, from the time that she was three years old, had been accustomed, on first waking in the morning, to cry out on account of pain on the left side of the occiput; which from that period had been constantly more or less increasing, especially during the spring. On the 20th of March, 1786, she was seized with a great aggravation of the usual pain in the hind head, accompanied with crying, giddiness, sickness, and vomiting; soon after which she fell to the ground without convulsions, but void of sensation. In this state she remained three or four hours. When I saw her on the 30th, her appetite was bad; her tongue clean; the heat of the skin in general, and the pulse in the radial artery, both natural. The abdomen was somewhat swelled but soft. She had a good deal of what her mother supposed to be flatulency, occasional pain in her bowels, and some degree of costiveness. She appeared frequently to be stupid, and when spoken to did not answer.

From the 27th to the 30th, she had two fits; and afterwards, to the 10th of April inclusively, four, which were less violent. She generally continued in them from three to four hours without sensation, and with burning heat of the head. From the 10th to the 17th, she had from two to five attacks daily, but

without vomiting or total loss of sense. On the 18th and 21st, she took calomel; the first dose of which operated four times, the second thrice. On the intermediate days she was costive. From the 17th to the 24th of April, she had three slight fits, but none afterwards. On the 22d of May, she had continued to take the calomel twice a week, from which she had free evacuations; her bowels still continuing costive in the intervals. Her pulse was natural, and she had no pain in her head; but was extremely unsteady in walking, tumbling about from side to side.

May 29. Had eight or nine stools with the first pill, and three from the second; but her bowels are otherwise very irregular. Says she has no pain in her head, but her intellects seem somewhat impaired. There is no appearance of disease about her eyes. Tottering in walking somewhat lessened.—Sumat Pilulam è Calomelani ter in hebdomadâ.

June 12. The pills operate well; but she has no stool on the intermediate days. Her appetite is bad. She says that she has no complaint in her head, and is tolerably well, except that she reels in walking, which, according to her own account, is not owing to any thing in her head, but to weakness in her legs.

June 19. Is hotter than natural, and for some time past has had slight sweating of the hands, especially in the night. Grinds her teeth very much. Hearing good; but her sight has been somewhat impaired since the commencement of the disease. The pupils of the eyes contract sufficiently, on her being brought to a strong light; but are more open

than they should be in a moderate one. Four or five stools daily from the calomel, but none on the intermediate days. Walks with great difficulty.

Repet^{r}. Pilulæ. Admoveatur nuchæ Emplastrum Cantharidis et ft. exulceratio per mensem.

July 17. The blister is now nearly healed, the bowels have been regularly open by means of Senna electuary and Jalap. She appears dull of apprehension, totters in walking, and the pupils continue dilated in an improper degree in a moderate light.

℞ Massæ Pilularum Mercurialium ʒj Ft. Pilulæ xxiv æquales. Sum^{t}. j mane et vespere.

August 7. Has had every day one or two motions, without any change in the urine. Mouth not affected by the Mercury. Her appetite is tolerably good. She is very weak ; and giddy in the morning on first getting out of bed. For four or five days past one of her eyes has been slightly inflamed ; the ear on the opposite side is scabby and sore, and pimples are coming out on various parts of her body.—Sum^{t}. Pilulam unam nocte, duasque primo mane quotidie.

August 21. Has omitted the pills, on account of the soreness of her mouth.

On the 25th of September following, the mother of the child reporting that her daughter was much better, I saw her no more during that year.

On the 9th of April, 1787, her mother again brought her to me. In the preceding year, she had continued for some time to see and walk better, and was otherwise tolerably well, except with regard to the pain in her head, which chiefly affected her in bed,

when she turned or moved. About a month after Christmas, the complaint in her head and other symptoms were much aggravated.

On the 16th, she was affected with fits similar to those of 1786. A very bad one occurred on the 13th, at three in the afternoon; when she fell down in a state of insensibility, with a twitching in her eyelids, and did not recover her speech for nearly six hours. About half an hour after the commencement of the attack, she was affected with vomiting and purging. The Mercurial pill was ordered twice a day as formerly.

On the 19th, a blister was applied to the nape of the neck, and the Mercurial pills were repeated.

April 27. The blister rose well. The first day after the last report, the pills operated five times; each of the following ones only twice. During the night she is hot, and starts much in her sleep, which she is apt to do on the least noise. Her skin is cool; pulse upwards of 100, and rather weak. Her sight is very obscure. There is no apparent disease of the humours, but the pupils contract irregularly, and light is very disagreeable and painful to her. When she looks at any thing attentively, there is some strabismus; and she seems unable to direct her eyes without frequent and uneasy efforts, accompanied with wrinkling of the forehead, and depression of the eyebrows. Appetite tolerably good.—Sumat Pilulam Mercurialem singulis noctibus.

May 10. Since April 30, the pills have been regularly continued every second day, and more than an ounce of strong Mercurial ointment has been well rubbed on

the inside of the thighs. Bowels open. Head much worse. Her tongue is white, and she is thirsty and otherwise feverish. Her left hand is now affected with shaking, so that she cannot raise it to her mouth; and she has had for some time past a drooping of the left eyelid. A blister was ordered between the shoulders; a drachm of strong Mercurial ointment to be well rubbed in thrice a day, and Aqua Amm. Limon. to be given every six hours.

May 17. The blister rose well, and the mercurial friction, with the addition of powdered Calomel, rubbed within the lower side of the cheek morning and evening, has been properly employed, but no effect has been produced on her mouth. She has had daily from one to two motions. No sickness. Appetite very bad. Tongue white, but moist. Pulse 120, regular, and of natural strength. Her hands are hot, and the heat is much increased at night. She has a short cough, with little expectoration. Is constantly heavy and sleepy. Has at times pain in the occiput, particularly on motion; but says, that she is often perfectly free from it. Strabismus increased, the left eye being turned much inwards, and the sight of that eye being particularly impaired. Light is very offensive to her, though the pupils do not contract, but rather dilate from its admission. She has tremors and startings of her limbs, more especially on the left side.

There has been no fit since the 16th of April; from the commencement of the complaint her senses in general have been more dull than usual with other children.

On Saturday, May 19, she was in better spirits than usual, walked about, eat bread and drank tea. About 9 P. M. she was seized with vomiting, complained much of her head, had flushing of her cheeks, and a general increase of heat. About 12, she was seized with a loss of her senses and convulsions, which continued till about half-past one the next morning, when she died. In the article of death, and for an hour afterwards, there ran from her nose and mouth a clear fluid, to the quantity, as her mother believed, of about a pint; and on the 20th, there was a discharge from the same parts of a small quantity of sanious blood.

She was opened on the following day. The vessels about the head and neck were unusually turgid with blood. She appeared to be properly formed, and was in no degree emaciated. Above the right elbow there was a cicatrix, as from a scrofulous wound.

The dura mater was in the natural state. Between it and the pia mater, following its course down to the base of the cranium, there were about three ounces of serous fluid. The blood was every where fluid, and the vessels of the pia mater were prodigiously distended with it. In this membrane, on the lower side of the left hemisphere of the brain, near the sella turcica, there were several bladders filled with fluid, the largest of which were about the size of a small pea; and others still larger in that part of the pia mater which invested the cerebellum on the right side, immediately under the tentorium. The substance of the brain, and of the right lobe of the cerebellum, was in the natural state;

the left lobe of the latter entirely changed, being nearly throughout of a yellow colour, hard, elastic, brittle, in some parts of its substance completely ossified, and by its surface firmly adhering to the tentorium. The medulla oblongata had also entirely lost its natural appearance, being precisely similar in structure to the left portion of the cerebellum, except that it was free from ossification. When strongly pressed in any part by the nail, it broke exactly like a piece of boiled gristle. In the ventricles of the brain there were at least four ounces of a clear fluid, which did not coagulate on the application of heat.

Various Morbid Affections of the Brain.—June 15, 1809, William B., aged three, had last summer the natural small-pox in a very violent degree, but recovered, and has enjoyed good health till about four months ago, when he began to complain of a pain in his belly; and had sickness and vomiting, which occurred only in the morning, just after he rose from his bed at six or seven o'clock. Two months ago he had a stiff neck, with giddiness, strabismus, and occasional headach.

He sleeps very little, and frequently moans, or cries out violently, day and night. He has entirely lost the use of his legs in walking, equally on both sides; and the feet are rigidly contracted downwards, so that the toes sometimes nearly touch the heel; but he can move his hands and arms. The pupils of his eyes are moderately, and at present equally, contracted, but they are not at all affected with the difference of light and darkness. The strabismus has

been gone for a week. About a fortnight ago his head was for half a day drawn stiffly backwards, and his body bent into a rigid arch. He was afterwards convulsed for a week, and has been so occasionally since. His head is very large, and he is unable to keep it erect; but the sutures are close. Bowels bound. Pulse 124. Respiration 18, and very soft. He was ordered to take Calomel for two days.

June 20. He had many black motions from the Calomel. A drachm of strong mercurial ointment has been rubbed into his thighs for an hour, the last four nights. His lips are sore, but not the inside of his mouth. He does not squint, but the pupils open and shut irregularly without regard to light. Three stools daily, less black than before. Pulse 96. Respiration 11. During my numeration he was once 20 seconds without inspiring.—Repetatur frictio.

June 24. His teeth and mouth are very sore, and his breath extremely offensive. Pulse 116. Respiration 18.—Omittatur Frictio.

June 27. On the 25th, he had a fit like that before described, which drewhim into an arch backwards for a quarter of an hour. His mouth is very bad, and there is a very great discharge of saliva. He is rather costive. Pulse 132. Skin cool.

I find that he has for a considerable time had a scrofulous swelling on the inside of his elbow, which broke a fortnight ago, and discharges a great deal.

℞ Pulveris Jalapæ ʒj: divide in chartulas vi æquales.
Sum^{t}. j pro re natâ.

July 5. Each of the powders operated four times,

producing yellow evacuations. On the 2d, he had another bad fit, in which he was drawn back as usual. The salivation continues. He appears to be quite blind. Pulse 120. Respiration 10. He seems as if he generally held his breath on purpose, and in expiration makes a long continued vibrating noise through the glottis, by the voluntary action of the muscles which close it.

August 24. He has taken no medicine since the last report, and has continued much the same, with occasional fits of spasmodic contraction, in which, as before, his head and legs are drawn back, his belly is raised into an arch, and he becomes senseless. His last attack, at one o'clock yesterday, continued almost half an hour. He is at times quite sensible, and moves all his limbs. He is entirely blind. The right pupil contracts on the admission of light more than the left, but both very irregularly, opening and shutting, as if without regard to the stimulus. He sleeps better than he did, but moans much in the day. Bowels regularly open. Yesterday a great deal of bloody matter oozed out of his left ear, and continues to do so to-day. His forehead is very prominent, and his head become very broad. For a fortnight it has been open all along the sagittal suture. Pulse 116, soft and regular. Respiration 19, and rather laborious.

I heard no more of this child till his death, which took place on the 26th of December.

He was opened on the following morning at half-past eight o'clock.

His forearms were rigidly drawn upwards, the

elbows being parallel and close to the body, and the wrists against the forepart of the shoulders, with the fists clenched ; in which position they had been without action for several weeks. He was extremely emaciated, being literally only skin and bone, though he had always taken food tolerably well.

The cranium was greatly enlarged, especially the occipital and parietal bones. All the bones were thin, and in some degree flexible, and the sutures were loose and gaping, without any protrusion of the soft intervening parts. The dura mater was thin, and adhered inseparably to the cranium. There was no fluid between it and the pia mater, which, as well as the dura mater, was entirely free from any preternatural turgescence of the vessels.

The substance of the cerebrum, especially in the left hemisphere, was very much extenuated, and little thicker in consistence than clotted cream.

The ventricles contained at least eighteen ounces of a perfectly transparent and colourless fluid, of which I evaporated half an ounce, and found that no part of it coagulated, and that it left scarcely any appearance on the surface of the spoon in which I evaporated it. There was nothing preternatural in the parietes of the ventricles, or the plexus choroides, except that the natural hole between the lateral ventricles was full half an inch in diameter. The thalami nervorum opticorum were nearly obliterated, but no deviation from the natural state was observable in the nerves themselves. In the substance of the surface of the cerebrum on the left side, near the longitudinal sinus,

and corresponding with the upper part of the occipital bone, was an oval hard substance, near an inch in length and half an inch in diameter, which, on being cut into, consisted of a homogeneous substance, similar in colour and consistence to Cheshire cheese. The whole of the left lobe of the cerebellum was in exactly the same state. The right lobe, together with the crura and medulla oblongata, was free from disease.

No morbid appearance could be discovered in the abdomen.

The thorax was not examined.

Effects of slow Inflammation of the Pia Mater.—Lord E., aged forty, above the middle size, with light hair and fair skin, a General in the army, who had served in Egypt, lived freely, and had been accustomed to most violent exercise, chiefly on horseback, began about the middle of the year 1810, without any symptoms of indisposition immediately preceding, to have some degree of faltering in his speech, which seemed to his family to be owing to an incapacity of ready articulation, rather than to any defect of memory or ideas. About two months afterwards, he occasionally, while walking, found himself unable to retain his urine; and about the same time he began to have weakness in his lower limbs.

These complaints gradually increased, so that he could walk only a short distance, as up or down stairs, or from one room to another, and then in a tottering manner, and scarcely, in general, without assistance. He now constantly passed his urine and stools, apparently with little consciousness; became nearly

speechless, as it should seem from mental imbecility, spoke the few words which he uttered in a jargon which was almost unintelligible, could just make himself understood that he had often a pain in his back and his bowels, was extremely averse to all medical means, and when they were proposed, expressed anger by violent movements of his arms and features. His arms were for the most part little affected, though there seemed to be an occasional weakness in the right. He was dressed every day, got up, sat to his meals, and helped himself to what was before him, swallowing without difficulty, and eating and drinking with apparently good appetite, but usually with little distinction of taste. At different times, he was affected with sudden fits of shivering, or tremor, in which the whole body shook, and he ground his teeth together. These fits seemed to be attended with no bad consequences.

It must not be omitted, that, when young, in America, Lord E. had a coup de soleil ; and that three years before the present attack he was suddenly seized with double vision ; which, as it was accompanied with no other symptom than a small tumor of the eyelid, was attributed to that cause. The tumor was removed ; but the double vision was not affected by the cure. It continued for three months, and then very suddenly ceased. Lord E. was also subject to pains in his knees and legs, which were supposed to be rheumatic.

He came to Bath in the month of June 1812. His pulse was natural as to frequency, but weak and

soft, his extremities were cold, and his hands were absolutely livid. His countenance was also pale. His bowels were for the most part bound. He sat almost continually in a stupid state, seeming to take no share whatever in what passed around him, but very much irritated when he was spoken to. His head usually being to the left side, and when he walked, which he sometimes would of his own accord, and without assistance, his body drooped to the same side. He would not go out; and, in bed, lay wholly on his back.

His bowels were kept open by an aloëtic aperient, and Tincture of Squills was given him as a sedative.

After some weeks he was prevailed on to bathe his feet in tepid water, and subsequently to employ, at home, a tepid semicupium.

On the 11th of August, while at breakfast, he was suddenly seized with a fit of torpor, in which the food fell out of his mouth, and his arms dropped, but he did not sink out of his chair. There was no convulsion. His eyes were in a natural state; his face was not flushed, his hands were cold and livid, and the pulse in the radial artery was much as it used to be. In the carotids it was, however, full and strong, and his forehead was hot. He had no sickness. To questions he returned no answer.

Blood was taken from his arm. It was dark, firm, and covered with a thick cupped crust of coagulated lymph. A purgative was with difficulty administered. After this bleeding he became hot all over. In the afternoon he was nearly in a state of insensibility.

Twelve leeches were applied to his temples, and drew tolerably well; but seemed to afford no relief. He moved his left, but not his right arm. The opening medicine was repeated, but as it produced no effect, a purgative glyster was administered, which operated several times. His pulse continued quick, and his skin hot; and the state of torpor was not relieved. The pupils of the eyes were contracted.

On the morning of the 12th, circumstances remaining as before, the temporal arteries were opened by Mr. G. Norman, but not more than six ounces of blood would flow. Previously to the operation the pulse was 96, and more full than it used to be, and the respiration 22, very gentle, and from the diaphragm only. The blood from the temporal arteries was full as dark as venous blood. He still continued not to move his right arm, and it was observed that when the right eyelid was raised in order to observe the pupil, and even when the temporal artery on that side was punctured, he expressed no uneasiness, but gave unequivocal signs of feeling when the same irritations were employed on the left side. The purgative medicines were continued, and operated well. Citrate of Potash with Squills was given.

On the 13th, no change of symptoms. Pulse 96. Respiration 14, not stertorous, and both from the thorax and diaphragm. Twelve leeches were again applied to his head, and drew well; and it was directed that his head should be continually wetted with cold water. He went on with his aperients, which still operated; and took the former sedatives.

Some gruel was occasionally swallowed ; but every thing with difficulty. His eyes, when open, had been always directed to the left ; and the pupils were in a natural state.

About four the next moruing he began to grind his teeth, and continued to do so till eight. This action was always produced or increased by any attempt to swallow, or other irritation. There was no stool. His eyes were open, and continually turned to the right ; and there was some suspicion that he observed persons about him. He still continued not to move his right arm, but occasionally lifted up his right knee. There was neither strabismus nor dilatation of the pupils. His skin was hot ; his pulse 96, and subsequently to the preceding evening more full than it had before been. His respiration was 12, gentle, and not stertorous. About nine o'clock ten ounces of blood were taken from his right arm, and the opening medicine was repeated.

At one P. M. the heat of his skin, and grinding of his teeth were entirely gone. His pulse was 72 and soft. His respiration 14. He moved his right arm, and when I spoke to him appeared sensible, and answered questions, though imperfectly. The blood flowed freely, and when coagulated, was very dark, and strong, with puckered edges, but no separation of coagulable lymph on the surface.

From this time Lord E. began to recover, to a degree much beyond my expectations. In a few days he was able to go into the adjoining room ; and shortly afterwards went out in a carriage, which he seemed to

enjoy. His power of attention and speech was greatly improved, and his ability to use proper words gradually increased; so that by the middle of September, he not only understood perfectly every thing that was said to him, but would often spontaneously make apposite remarks, suitable to the conversation which was passing round him. He began to lie on his sides, in consequence of which his nights were better; and he lost the greatest part of that passion, which he had before generally expressed, when he was asked a question. He was even pleased when inquiries were made after his health, and was so far from being averse to remedies, that he sometimes suggested their use, and on the 3d of September readily submitted to being blooded, in consequence of some increased quickness and strength of pulse, which followed a very long and violent rigor or tremor of most of his muscles of the head and upper part of the body. The power of his limbs seemed to be considerably improved. His hands were no longer livid. His pulse was fuller than it used to be. He eat and drank well, helping himself to his food. Still, however, he complained of his back, passed his urine and stools involuntarily, fancied himself in Scotland, and shewed great want of recollection in general. His medicines were of the saline, diuretic, and sedative kind; his bowels were kept open by Aloës when necessary; and the pained part of his loins was rubbed with the oil of Cajapoota, which appeared to afford him relief. He took no fermented liquors, and wholly abstained from animal food.

The favourable appearances gradually disappeared; and without any apparent cause of aggravation, at the end of two months Lord E. relapsed into a state nearly similar to that in which he was on his first arrival at Bath. In this state he continued till the month of January 1813, walking now and then, though weakly, about the rooms, and even occasionally up and down stairs; with some assistance feeding himself, and occupying himself, either in cutting out strips of paper for twisting, or in playing with little intelligence at draughts. His right arm and hand now appeared most weak, and the latter was more disposed to coldness and lividness than the left. He often complained of transitory pain in his back and his belly.

No change now appearing in the constitutional complaints, few remedies were for some time employed except aperients, which were every day effectually administered. From the month of January, Lord E. wholly lost the power of speaking, though he seemed to understand the import of the questions which it was necessary to put to him, and by gestures signified acquiescence or dissent. On some slight appearances of renewed attacks, blood was at two several times taken from the arm, but without any very obvious effect.

During this whole period, Lord E. rarely gave any intimation that he suffered pain or giddiness in the head; and, on the contrary, when asked, always either by words or signs denied their existence. There was no reason to suppose that he saw ill, though he remained, for the most part, in a state of apparent inattention to events passing around him; and the

pupils were duly contracted. That excessive irritability, under which he had before laboured, now rarely affected him. His pulse was generally nearly 80 in a minute, and very soft and weak. His tongue was clean and moist. His skin and extremities were usually during the day cold, but became warm in the night, when he often sweated. His nights were for the most part disturbed, but sometimes tranquil. He continued to pass his urine without notice, and generally, during the night, his stools.

From the latter end of April, Lord E. appeared to be weaker, and his mouth was often full of saliva, which occasionally ran out of it. No other change occurred till the 8th of May, when he became more dull than usual, and fell very much to the right side. The lividness of the right hand increased. The pulse was at the same time quickened, and the face was flushed and hot. Ten leeches were applied to the temples, draughts of Citrate of Potash with Liquor Antimonii Tartarizati were ordered, and the opening draught was continued.

On the 9th, Lord E. appeared somewhat better. The draughts were repeated; the head was washed with spirit of Rosemary; and on the 10th an aperient draught given.

On the 13th, he had two attacks, in which his eyeballs were drawn rigidly upwards, his arms became stiffened, and he was utterly void of sense. From this time he never left his bed. His face and head were extremely hot, his feet were of a due warmth, and his pulse was 96 in a minute. Twelve

ounces of blood were taken from the left arm, and exhibited a very solid crassamentum, having a surface slightly concave. The head was frequently bathed with cloths dipped in water, cooled by Muriate of Ammonia, and draughts of Citrate of Potash with fresh Squill were given every four hours. These measures had no effect on the pulse, and did not permanently diminish the heat of the head; but the patient regained his senses, and it is worthy of attention that in the evening, shortly after the blood-letting, Lord E., after having some time looked up in the face of his faithful servant, who was standing over him and anxiously watching his countenance, suddenly exclaimed, "I am very ill."

It was evident that the part in which he suffered was the head, not only from the symptoms which have been related, but from his frequently putting one or both hands to the forepart or crown of his head. He passed a restless night, but through the whole of the 14th, to questions which were put to him, obscurely answered yes or no. The medicines and cold wash were repeated.

He passed the whole night without sleep. On the 15th, there was much less of sensibility, and he made no attempt to answer questions. Heat and pulse as before. No motion. Ten leeches were applied to the temples, and drew well. The aperient and other remedies were repeated.

During the forepart of the night, Lord E. was restless; but about one in the morning of the 16th, he became more quiet, and between nine and ten was

said to be asleep. Early in the afternoon, though the same report was made to me, on examining his state, I found him comatose, his hands being occasionally convulsed, and there being little appearance of sensibility, except some increase of twitchings when he was touched, and some remains of the power of deglutition when liquids were put into his mouth. His pulse was more quick, and the heat of his head was little abated. Four ounces of blood were taken from his temples by cupping, by Mr. Phinn, with the effect of producing some appearance of syncope. A large blister was applied to the nape of the neck. At ten P. M. the pupil of the right eye was dilated, and scarcely capable of contraction on the admission of light. The pulse was 112, and the twitchings were very frequent. With the concurrence of Dr. Crawford, who was now consulted, a blister was applied to the shaved head, and mustard cataplasms to the feet. The medicines were continued.

At nine in the morning of the 17th, the blisters and sinapisms had produced their full operation, and there had been a copious stool. The pulse was 140, and somewhat stronger than before; the respiration 38, chiefly from the diaphragm, and now and then assisted by a deep sigh. There were frequent convulsive twitchings of the hands, left leg, and abdomen. Both pupils were greatly dilated, and little affected by light.

At five P. M. the pulse was 130 and strong, and the respiration 30. The pupil of the right eye, though nearest the light, was most dilated; and it

seemed as if the cornea of the left was in some degree flattened, from the transudation of the aqueous humour.

On the 18th, at ten in the morning, the pulse was 124 and strong; and the respiration 48, but was sometimes for a long while wanting, and sometimes sobbing. There were also occasional hiccups and groanings. The arms were for the most part bent across the abdomen, and were less affected with twitchings; but the knees, and more especially the left, were frequently, for an instant, raised up. Both pupils seemed entirely insensible to light; but the right was most dilated, and the eye generally closed, while the other was often open. Mercurial ointment was ordered to be twice rubbed into the inside of the legs for a quarter of an hour.

At ten in the evening, the pulse was 144, and of moderate strength; and the respiration 32, with some degree of wheezing. The power of swallowing was apparently somewhat improved. The eyelids were occasionally raised, and the eyes moving round. Lower jaw somewhat fallen.—The mercurial frictions were repeated.

On the 19th, at ten A. M. the pulse was 144, and weaker than before; the respiration 40, and almost wholly from the diaphragm, generally soft, but sometimes sobbing. The wheezing was gone, and the spasmodic catchings were every where diminished. The eyes were occasionally open, and directed towards the light, changing their axes when the light was removed. The left eye seemed to follow objects moving round the bed; and the pupil slightly con-

tracted on the admission of light, but appeared insensible to the near approach and even touch of the finger. The lower jaw was more fallen than the day before. When a spoon with a small quantity of liquid was put into his mouth, he closed his lips imperfectly round it, and slowly swallowed the liquid. The frictions were repeated.

During the day he once or twice appeared suddenly pale, and remained for some time without pulse or respiration. At ten P. M. the pulse was 144 and weak, but regular. Respiration 42, and almost wholly from the diaphragm. The hiccup, sobbing, and catching of the limbs, rarely occurred. Right eye shut; left generally open, and rolling about, but both completely dilated and insensible to light. Under jaw wholly fallen. When liquor was put into his mouth, he still made an effort to swallow, but was almost suffocated by it. The hands and body were warm, but sweating.

Through the night, Lord E. had frequent failures of respiration and pulse; became affected with sobbing and stertorous respiration, and occasional convulsions of the face; two hours after which, at a quarter past four in the morning he breathed his last.

It is worthy of remark, that in the many visits which I paid Lord E. during the year of my attendance, I never learned that he had any sickness, except what arose from the evident operation of medicines; neither could I discover that he had any strabismus, or, till the few days before his death, any preter-

natural dilatation of the pupils. His pulse never fell below 72 in a minute.

Nor must I omit to mention that he almost constantly lay on his back, and, to the very last, discharged large quantities of urine.

The body was opened on the day of his death.

The integuments of the abdomen, and the internal parts of the body, had at least the usual proportion of fat of a firm consistence.

The lungs, heart, liver, alimentary canal, and all the other viscera and membranes of the thorax and abdomen, were carefully examined, and were found to be in the most healthy condition.

The cranium was hard and very thick. The veins of the pia mater were greatly distended with black blood. The membrane itself, on the upper part of the middle and anterior lobes of the cerebrum, had lost much of its transparency. It was of a milky appearance and considerably thickened, and some fluid was effused between it and the tunica arachnoides. The cerebrum, when cut in horizontal slices, exhibited numerous points, from which dark blood not only oozed, but ran down on the cut surfaces. The whole substance was extremely soft and watery. This was also the state of the medulla oblongata and all the cerebral nerves. In the left lateral ventricle, which appeared most prominent before it was opened, were found eight ounces of pellucid fluid, and four ounces in the right lateral ventricle. The foramen monroii was nearly half an inch in diameter. The pineal gland was slightly gritty.

Many other appearances worthy of note were also observable. The first and second pair of cerebral nerves were unusually small. The thalami nervorum opticorum were of the natural size; but the nates were somewhat smaller than common, and the testes were so diminutive as scarcely to exhibit any perceptible prominence. The pons varolii was not of more than half its usual magnitude.

Nervous Disorders.—Whatever has the air of novelty in science is generally received with a due degree of scepticism. It is not, therefore, to be wondered at, that medical practitioners should have strongly expressed their doubts respecting the truth of the opinion on the cause of nervous diseases, which I published in the year 1788, when I attempted to shew that they depend on excessive determination of blood to the vessels of the brain. As, however, that theory was adopted from the evidence of facts, against all the prejudices of education and of universal opinion, so has it been most severely scrutinized during a subsequent period of twenty-seven years. That scrutiny has appeared fully to confirm the truth of the principle. The chief circumstances on which it is founded have already been detailed; but many others will occur in the course of this work. In the mean while, the conclusion will admit of additional support from the following facts and considerations, some of which have been wholly omitted, and others incompletely exhibited.

As such maladies are liable to be excited by those

passions or emotions which increase the action of the heart, and therefore the momentum of the blood in the head, such more especially as those which are attended with surprise; so they are capable of being diminished or removed by those which diminish the action of the heart. Of these, that which particularly deserves notice is Fear; of the effect of which in diminishing excessive action of the heart, and therefore undue determination to the head, together with those maladies which arise from the latter source, I am able to adduce some very striking examples. So also syncope, from whatever cause, will immediately suspend the progress of nervous affections. Accidental hæmorrhages will have the same effect. One lady, whom I attended, was cured of those complaints by hæmorrhage from a blow on the nose; and a medical friend, of this city, has communicated to me another instance of the same happy effects of that discharge on a lady from a fall on the head, which cut the temporal artery.

Whether in a great majority of such cases, when habitual, the pulse in the carotid arteries is stronger than in persons in general of the same size and degree of obesity, and, in all such cases, during the fits of disease than at other times, those only are qualified to decide who have repeatedly made the experiment. That this is, however, actually the case, thousands of trials have enabled me positively to assert. I have reason to believe that some natural or acquired excess of diameter in those vessels, affords a common predisposition to disorders of this nature. Nay from the

multitude of trials which I have made, I have had an opportunity of discovering several examples of morbid dilatations of certain portions, sometimes of one, sometimes of both carotids, which have accompanied severe affections of the head, and the progress of which I have been able effectually to stop, by bleeding, and the abstraction of many of the common stimuli. Of one gentleman, in whom I observed this attack more than twenty years ago, I have long since lost sight. Another, in whom I discovered the same malady about seven years since, and who afterwards suffered a relapse of the complaint, has been effectually relieved by similar means, and now enjoys good health.

What it is that enables the heart to throw blood with peculiar and predominating force to the head, it may be worth while to inquire. The quantity going to that part, relatively to that passing through the rest of the system, is in man, and in man only, extremely great even in health. The face is more subject to eruptive disorders than other parts. It seems, also, as if the force of sanguineous determination was, within certain limits, proportioned to the proximity of the organ to the heart. The fact with regard to the head is, however, sufficiently ascertained. Under any increase of action in the heart, the head first experiences the impulse, so that the pulse in the carotids becomes strong and hard, and the face becomes flushed and hot, before any increase of determination is perceived in the subclavians or other more remote branches of the aorta. It is partly

from this reason that strong exercise causes us to sweat soonest and most copiously from the head, while the same effect is not observable in horses, neat cattle, &c. On the contrary, during the approach to natural death, the pulse in the carotids is perceivable long after that in the other ramifications of the aorta can no longer be felt. So after large hæmorrhages, when the pulse in the arteries of the wrist and other limbs can scarcely be perceived, that in the carotids is extremely strong, and the patient sometimes suffers flushed cheeks, headach, and various other effects of excessive sanguineous determination through those arteries.

Certain persons have doubted whether the effects attributed by me to pressure on the carotids are really owing to that cause. Nay, others have gone so far as to say that this operation must necessarily act more on the internal jugular vein, than on the carotid artery; and therefore accumulate blood in the vessels of the brain, rather than diminish the flow of blood to it.

I begin with observing, in answer to this latter objection, that it misstates the question; which is, not as to the mere quantity of blood in the brain, but as to the impulse of that blood; and he who, on the ground of that objection, denies the power of pressure on the artery to diminish the impulse or force of current, might just as well deny the same power to a tourniquet, because that also compresses the veins of a limb as well as the artery.

That the carotids are, however, capable of being very strongly compressed, will not admit of a doubt. In thin persons, and more especially women, a very great diminution of diameter may be produced in either of them, by pressing it strongly somewhat above the top of the Cricoid cartilage with the thumb against the vertebræ of the neck; especially when the sterno-mastoid muscles are relaxed by the horizontal posture.

Cutting through one par vagum has no effect on the stomach. Surely then, if pressure on the carotid gives power to the stomach, or perhaps rather the alimentary canal, to propel wind downwards (for it never makes it come up), it is not by any pressure on the par vagum. So also, as cutting through both nerves of the par vagum makes an animal vomit, the effect when the carotids are compressed cannot arise from pressure of the vagi, because no vomiting or sickness is produced, but an increase of the natural action, by which the contents of the alimentary canal are propelled downwards. But Bichât says, that irritating one or both nervi vagi makes the stomach contract. But this contraction takes place immediately; whereas the pressure of the carotid produces it sometimes only after many seconds, and the more the harder the pressure.

In order to prove that the effects attributed to the diminution of impulse by pressure on the carotid arteries are really owing to that cause, I will here bring under one view a few of the more striking proofs, some of which have already been in a more cursory manner adduced.

1st. I have already stated, that when a rush of blood is perceived in the ears, and each gust is synchronous, as it often is, with the systole of the left ventricle of the heart, being slow as that is slow, and quickened exactly as that is quickened, I have been often able by pressure on one carotid wholly to stop the rush on that side, while no change was perceived in the other side. The pressure being removed, the gusts in a few seconds returned as before.

2dly. When any degree of pain has existed about the neck and throat, strong pressure of the carotid on one side has always increased the pain on the other side. This I conceive to be capable of explanation only on the supposition, that an interruption of the free evacuation of the aorta by one carotid must necessarily determine a somewhat larger proportion of blood to pass by the other carotid, and therefore produce a corresponding dilatation in that artery. Such an explanation exactly accords with many other phenomena of animal circulation. Thus strong pressure on the inside of the humerus over the back of a chair, while it stops the pulse in the arteries of the wrist, often produces a sense of fulness and other uncomfortable feelings about the head, which are relieved when the arm is removed. Still greater effects on the head were caused from the trials of the late Dr. Home, of Edinburgh, to excite the menstrual flux by the action of a tourniquet applied to the femoral arteries. Similar inconveniences occurred in the experiments of Mr. Kellie. Lastly, Dr. Hales also found that in living animals, in whose carotids

vertical tubes were fixed, strong pressure on the abdomen increased the ascent of the blood in those tubes.

3dly. Where there has been a sense of weight and fulness of the head, and flushing heat in the face, I have many times felt all taken away by pressure on one or both carotids; and the feet, which were before cold, experienced, by this change of determination, a comfortable glow of heat.

4thly. Other instances have been mentioned, in which existing maladies have been for a time removed by this operation; and, in all these cases, it has been obvious to the operator, that the effect has always been exactly in proportion to the precision and degree of pressure on the artery, and that it has diminished precisely as the direction or force has been changed.

5thly. I have seen hæmorrhage from the nose considerably moderated by this compression.

6thly. It has already been mentioned that hurry of spirits and quick transition of thought frequently occur, and prevent sleep. Now as this state of mind is usually the effect of causes which long quicken the motion of the heart, which motion, conformably to my own personal experience, is, in that state, actually excessive, and is often accompanied with the rushing in the ears already mentioned; and as both symptoms diminish exactly as the hurry of the heart subsides, we may reasonably conclude it to arise from excessive impulse of blood in the head. These affections I have in myself a hundred times removed, and induced calm sleep, by strongly compressing one carotid artery.

The effect to which I have last alluded, and which

was mentioned in the original memoir, drew on me some uncandid strictures from an author, who, because something relative to the connection of sleep with the carotid arteries had been written by Galen, and quoted by Morgagni, neither of whose remarks on the subject I had ever seen, began with accusing me of plagiarism, and, with an ingenious inversion of the common course of obloquy, ended with denying the fact. With men who, in the fulness of their own conceit, doubt every thing but what accords with their preconceptions, or who, in the emphatic words of Locke, "canton out to themselves a little Goshen in "the intellectual world, where light shines, and, as they "conclude, day blesses them;" the earth too much abounds to justify the labour of exposing them; but the more ingenious and candid of the profession will decide whether, because a brute animal, in perfect health, is capable of having both carotids rendered impervious to the passage of blood without producing sleep, or otherwise impairing the functions of the brain, it therefore follows that the diminution of that excessive impulse, which had produced disease, might not contribute to restore health? To one of these gentlemen, to whose well-earned fame my praise cannot add, I would appeal, whether his own subsequent experience is not one of the best evidences on record of the truth of my position? In reality, that conclusion which, by my observations, was rendered only in the highest degree probable, has now, from the effects of his operations, and that of Mr. Travers, received the force of actual demonstration.

Thus in the first case of the former gentleman, Mary Edwards had in the right carotid artery a large aneurysmal tumor, which "beat with very great "force, and occasioned a strong pulsation in the "brain," so "as to prevent her sleeping." On the 1st of November, Mr. Astley Cooper tied the artery with a double ligature. "As soon as the threads "were tied, all pulsation in the tumor ceased." That night she slept six hours. "The pulsation in the "tumor had not returned; that in the brain had "ceased."* In Humphreys, the second patient of the same gentleman, there was a smali aneurysmal tumor of the left carotid, "accompanied with great "pain on the left side of the head, which began about "five months before, and was attended with a sense "of pulsatory motion in the brain." Upon attempting to stoop at any time from that period, he "had "an insupportable feeling as if his head would burst; "a giddiness; loss of sight, and almost total insen- "sibility." As soon as the operation of tying, &c. the carotid was finished, "Mr. Vose" (of whose care and attention, on this and other occasions, Mr. A. Cooper speaks in terms equally honourable to the professor and the pupil) "now asked the patient if "he experienced any unusual sensations about his "head. He answered that for the first time, since "two months after the formation of the tumor, he "was relieved from a distressing pain, which extended "up the left temple, accompanied by a violent

* Medico-Chirurgical Transactions, vol. i. p. 1—4.

"throbbing of all the arteries of that side. This "pain never returned."*

The patient of Mr. Travers, Frances Staffell, accustomed for years to distressing pain of her head, had a protrusion of the globe of the left eye, and two pulsating tumors about the orbit, "much increased "by agitation of mind or strong exercise of body; "she had a constant noise in her head, which to her "sensation exactly resembled the blowing of a pair "of bellows. The beating and noise increased sen- "sibly when her head was low and unsupported." The pain was in the crown of the head, occasionally shooting across the forehead and temples. Pressure with the thumb on the trunk of the common carotid caused the pulsation in the lower tumor to cease altogether, and nearly or quite removed the whiz in the upper one. The operation of tying the carotid having been performed, the patient immediately observed that the pain was numbed, and the noise in her head had entirely ceased. The thrilling motion of the upper tumor was not however wholly removed, and, in a few hours, extended itself to the lower tumor. Some symptoms of fever had come on, and pain of the head had returned. At the end of five weeks she was totally free from pain of her head, though it seems as if the pulsation feebly continued not only in one or both tumors, but in the carotid below the angle of the jaw, occasioned, in the opinion of Mr. Travers, by the reflux of blood by the Circulus arteriosus.

These cases are sufficiently indicative of the power

* Ibidem, pp. 224, 225, 226, 227.

of increased impulse of blood to the head to produce various symptoms which may be removed or relieved by reducing that impulse.

I must, however, here be permitted to remark the fallacy of the argument by Mr. Travers, that the general impulse of the blood on the brain is not diminished by cutting off the supply by one carotid, because either the same quantity, as went by the two, would now go by the remaining one, or, at least, that the velocity by that one would be proportionably increased, and therefore the momentum would be the same. I twenty-six years ago contended, that the quantity passing by one carotid would certainly be increased by compressing the other; and I have since admitted the same fact; but upon what principle the whole of the blood which went by two carotids, springing from the free trunk of that capacious vessel the aorta, can be led to go by one, or by what power that remaining artery, placed as it is, can be dilated so as to admit the double volume of blood, I am at a loss to know. Neither do I think it in any degree probable, notwithstanding the illustration of the mechanical force of pressure by a bit of bone, that the impulse of blood exerts its power alike on the whole brain, let the part on which the impetus is made be what it will. It appears to me that the case which I sent to the Royal Society, and of which I have here given a summary, positively proves the contrary of that position; of which, indeed, evidence may every day be obtained from common cases of hemiplegia from extravasation. Lastly, so far am I from admitting

that compression of one carotid will necessarily increase the velocity of blood in the other, that in numerous cases, in which the motion of the heart has been preternaturally quick, I have actually found it retarded by that compression. This fact I long ago mentioned as having occurred in the case of the late Admiral K. S., in which it was repeatedly witnessed by the late Doctors Fraser and Ewart; the latter of whom probably, and the former certainly, was living at the time of the publication, to which I allude. A similar effect I have often experienced in myself from compression of one carotid, during that state of painful rapidity of thought and restlessness, which, after much professional anxiety and fatigue, have threatened to debar me from sleep.

On the whole, it appears to me that the facts which I have adduced are sufficient to shew, beyond all reasonable doubt, the seat and morbid condition of the parts, in those diseases which are usually called Nervous ; and the mode in which that condition is relieved by the mechanical operation which has been described.

Miscellaneous Remarks.—In what are called *Nervous complaints*, we see a patient sometimes one minute delirious, and as to the performance of other functions, as respiration, &c. well; the next minute labouring under some convulsive affection of the organs of respiration, as the larynx, &c.; then some violent pain or cramp in the muscles of the belly, &c.; then affected with a giddiness; then

headach; then a sickness, occasionally amounting to vomiting; while in each of these states all the other symptoms are wanting. The pulse, however, shall be too quick, or the face shall be flushed. Does this change of symptoms only arise from a morbid change in the parts themselves, or ultimately from the influence of the cause on different parts of the brain, and through them on the parts severally affected?

It is a characteristic of the *nervous temperament*, that such patients always give way to present feelings, so that they cannot do things, however beneficial, if they are not accordant with their present notions of ease or pleasure.

In such persons, the slightest inconvenience or pain is a matter of the most grievous affliction. Every one is to listen to the recital of the grievance, which occupies not only their own entire thoughts, but is to occupy those of every other person. To patients of this kind, the death of an only and otherwise beloved son is comparatively not afflictive. All the ideas center in the feelings and fears relatively to dearly-beloved self. This case is a fact, and not the product of imagination.

In *nervous complaints*, the symptoms of general affections, I should say of *affection of the brain*, *shew* themselves in different parts; as, in the alimentary canal by hysteria and vomiting, in the stomach by spasmodic difficulty of breathing, &c.

Nervous complaints arise from fulness (or are at least accompanied with fulness) of the respective part. Mrs. S. and Miss M. had catarrhs, (fulness of the schneiderian membrane), which were denominated

nervous, and went off without coming to coughs, &c., always brought on by going into a hot room. In Mrs. R., the nervous headach over the forehead, eyes, and occiput, was accompanied with fulness and stuffing of the nose like a cold, coming and going off in a short time. So nervous asthma is nothing but a congestion in the whole mucous membrane of the lungs, brought on by various causes.

In Mrs. E., determination of blood takes place more or less indiscriminately to the upper part of the body, affecting with a sense of burning heat and dryness, and a feeling of bursting, the face, eyes, head, mouth, tongue, throat, chest, and stomach. These burnings are sometimes more violent than at others; and when they are greatest, the spirits are proportionably depressed. She has great bodily strength, and is able to walk eight or nine miles without fatigue in her limbs. The pulse in the wrist is natural; that in the carotids always too strong. The symptoms are greatest, when they are attended with palpitation of the heart.

Cold and livid hands and feet, in nervous affections, as in the cases of Miss N., and Lady E. L, with determination to the head, are a mark of venous retardation of blood. The hands of Miss S. at the same time are moist and clammy.

The *time of nervous exacerbation and remission* is similar to those of fever. So, also, they are influenced by the coming on of warm weather.

In Miss C., suffering violent nervous affections, very hot weather produces great languor, without any

uncomfortable feeling of heat, her skin being always cold. Perhaps this may be from the head alone being heated.

Noise in the Bowels in Nervous Patients not Flatulence.—1st. Because wind in such cases does not pass up or down, though in real flatulency, after much noise, it does at last go downwards. It seems to keep pace with respiration, often exactly following every common inspiration.

2dly. It is not necessarily accompanied with other marks of dyspepsia, or increased by things which produce or increase dyspepsia.

3dly. It is never cured by carminatives, Bath Water, purgatives, &c. &c.

4thly. It is cured by means which cure nervous affections, as in Miss W.'s maid, regular, small, and thin, with open bowels, who on the third day of drinking the Waters, was seized with headach and violent hysteria, in which I had her bled once or twice; gave her saline medicines effervescing with squill; in consequence of which all the symptoms were removed, and the rumbling of the bowels with the rest.

There may be *three states productive of nervous determination.*

1st. Dilatation of carotids, with little increased action of the heart.

2dly. Dilatation of the vessels of the brain, with little increased dilatation of carotids.

3dly. Increased habitual or occasional increased action of heart. Miss M. Miss C.

Analogy between Nervous Determination to Head, and Inflammation of a Part.—The headach or actual pain, and at the same time increased sensibility to light, sound, and all other mental impressions, are exactly similar to gout or other inflammations, which are not only actually painful, but tender and unusually impatient of touch. The predisposition seems to be only a degree of the exciting cause.

Proof that Inflammatory and Nervous Affections arise from extraordinary Stimulation.—Nothing can be more evident to the senses than the effect of long watching, in increasing or producing these complaints.

The vessels of an inflamed part, and those in its neighbourhood, become to the eye larger, the arteries fuller, and the heat and swelling greater. During sleep, on the contrary, parts become cooler, smaller, and paler, (when, before, the contrary state had existed,) unless the effect be counteracted by posture or accumulated heat, as of a bed, or clothing, or other collateral circumstances, which aggravate the morbid state more than the quiescence relieves it; just as gouty pain will be increased by the heat of a bed, which would not take place if the parts were not clothed more than usual, as when the patient sleeps on a sofa.

That the *sinking and lowness* which occur in nervous affections depend on the head is evident from this circumstance, that they are almost constant sequelæ of hemiplegia and apoplectic attacks, however slight, occurring to patients, who never before their

respective attacks had the slightest feeling of that sinking.

It would be proper, also, to inquire, how far other causes as accidents, &c. happening to the head produce similar effects on the nerves in general.

Suppose nervous complaints to depend ultimately on undue irritability of the heart arising from direct debility, yet if the actual paroxysms depend on undue determination to the head, stimuli operating on the heart so as to increase that determination must do mischief.

In the consideration of various spasmodic or nervous affections, whether of voluntary or other muscles, it will be proper to consider what parts of the brain or spinal marrow furnish the several nerves supplying the parts so affected.

As nervous affections, tremors, hysteria, epilepsy, &c., arise from indirect debility, *first of the brain*, and, according to the case, of the fibres of arteries themselves; therefore, hard-drinking, heat, violent exercise, and emotions of the mind, &c. &c. may produce the symptoms.

Any thing that produces long confinement, as a sore leg, a broken bone, chronic rheumatism, gall-stones, prolapsus uteri, prolapsus ani, a fall hurting the knee, pregnancy, study, sedentary and not laborious occupations, as watch or mathematical instrument making, constant slow riding on horseback in farming, a change from walking to riding on horseback, &c., will produce not only all the common nervous complaints, but the most serious cerebral

affections. All the above I can illustrate by many examples.

That late hours very much dispose to violent determinations to the head is certain. A very large proportion of waiters at inns, billiard-markers, and chamber maids, are affected with violent nervous affections, mania, vertigo, headachs, hemiplegia, and apoplexy. Thus the marker Andrews, &c. &c. all at an early period of life.

A person long confined by nervous disorder, yielding to present inconveniences, but capable, by due exertion and self-denial, of perfect recovery, dies of some affection of the liver or some other part. As in such cases various medical men are usually employed, he who comes last, decrying all who preceded him, has, perhaps, the merit of having discovered the important malady, though unhappily too late for the patient's relief.

Many diseases called *nervous* are relieved by discharges of blood. If that discharge is only the effect of a cause existing in the system, and not the cause of the relief, that cause so existing must be, according to the Brunonian system, debility; and therefore a disease owing to debility is relieved by a state of greater debility, producing an evacuation, also debilitating. [1799.]

Nervous Patients, mentally insane, never feel better till they are well.

Many patients, from long mental insanity, (obstinacy, perverseness, &c.) are never in their senses except when they are delirious.

Fatness.—I think I have been able to observe, that where indolent persons grow fat, they are not so apt to be affected with the various symptoms called nervous, as those who remain thin. It appears to me highly probable that this preservative effect is the result of the natural process of fattening, by which a state of fulness in the vessels is avoided, and those irregular affections of the sanguiferous system, and consequently of the nerves acted on by it, are prevented. Fatness acts like any other spontaneous evacuation from the blood-vessels. It certainly, however, does not prevent nervous diseases, where persons become indolent at an advanced period of life, who in the former periods have been accustomed to much bodily labour, as mechanics of various descriptions, blacksmiths, tilers and plasterers, masons, and carpenters; though, indeed, such persons more usually become gouty, dyspeptic, pulmonic, or dropsical, than nervous.

All the complaints denominated Nervous appear to arise from irregular and unequal distributions of blood to different parts of the habit, according to their *excess or defect, increasing or diminishing*, in an undue degree, the functions or actions of the *parts severally affected.* General nervous irritability, shewing itself in unjust mental depression, spasms of various parts, &c., depends on undue sensibility of the brain, produced, perhaps, by a plethoric state of its vessels; while *actual* coldness of parts is owing to a deficiency of blood in their vessels. I say actual coldness, because I do not know that a sense of coldness to the patient in any part arises from the same error.

One common cause of these errors of distribution is general plethora, which, besides the nervous symptoms, frequently produces a disposition to dropsical effusions in the lower limbs, a symptom which in such cases is not dangerous.

The removal of the general plethora must principally be effected by early hours, and by the uniform exercise of the body in walking, swinging weights, playing at battledore and shuttlecock, &c., and not by the fictitious methods of airing in carriages, and riding on horseback. This practice must be begun with moderation, gradually increased as the strength will permit, and continued during many months till the flesh is reduced, before any sensible good effect will take place. In the commencement of this plan, fatigue will arise, the swellings of the legs will increase, various pains will occur, and the sufferings produced by actual exertions will be attributed to an incapacity of exertion, from which they are widely different.

My medical creed, on the subject of nervous complaints, is thought in the highest degree heterodox, and subjects me to the pains and penalties in such cases made and provided by my medical brethren.

Cases.—Dec. 14, 1808. Mr. E. S., aged 22, of a florid complexion, and short, whose father was subject rather to nervous depressions, and who has lived freely, about eighteen months ago began to feel a depression of spirits, and weight upon the head and forehead, without pain, but occasional confusion, so that objects, especially in walking, did not appear to him as they used to do. This has continued ever

since with little variation. He had, also, a feeling of fulness, and weight and oppression about the pit of the stomach, rather tending to the right, and somewhat sore on pressure. No indigestion or flatulency. Appetite irregular. No thirst. Slept at first very ill. Dr. Baillie ordered him to be twice bled, and frequently cupped and purged, and to live abstemiously, and abstain from wine, beer, and spirits. Accustomed to bleed at the nose from his boyhood, to the amount, sometimes, of half a tea-cup; but it diminished before this complaint began. He has had this symptom, however, at times since; and it always comes on in two days, if he drinks ale at dinner instead of water. It always certainly relieves the above feelings.

Before this complaint came on, he was extremely nervous and irritable. Bowels much bound; not having a stool naturally oftener than once in two days, and then very costive. He is not, however, apparently relieved by purging, which, when considerable, always makes him worse. Urine at night generally muddy and red, with a sediment, but not of a morning. After Dr. Baillie's treatment, he took and rubbed in mercury by Dr. Gregory's direction, on account of some disease of the liver to which his complaints about the hypochondria might have been owing, especially as he had jaundice about eight years ago. The mercury did not purge him, but it relieved the feeling about the hypochondrium and epigastrium, and procured him better nights, which have since continued, without any benefit to his head. Pulse 78, and rather wiry. Carotids preternaturally

-strong. Feet warm. Tongue rather furred. Nervous irritability, with great depression, tremors and catchings frequent. No sickness.

For about eight months to the present time, with a few intervals, he has continued taking Calomel or other preparations of Mercury.

He describes the principal feeling with which he is and has ever been annoyed, in his own language, to be similar to what arises to a person "who has taken "opium, and not slept it off."

Directions to Mr. E. S.

In order to relieve these complaints, it will be necessary to pay very minute attention to regimen and diet. I would wish you wholly to abstain from spirits, and all sorts of fermented liquors without distinction; to eat sparingly of meat, poultry, and game, and that only once a day; to substitute a moderate proportion of white fish twice a week; to avoid much butter or sugar, rich soups, creams, ices, jellies, chocolate, pastry, cheese, and fat or fried meats; and wholly to abstain from suppers. Your food should be eaten slowly, well chewed, and always somewhat less than your appetite demands; and I would strongly recommend to you never to drink at dinner till you have perfectly done. Fine and strong tea or coffee should be avoided; you should go to bed and rise early, and shun hot rooms.

Of all the means which conduce to recovery in such cases, nothing is more essential than habitual exercise; and the modes on which I would wish you chiefly to depend are the following.

1st. Walking, which should every day be used, without regard to weather, as far as your strength will permit. The only rule in this case is to walk so long that rest will be refreshing to you, and not be found inadequate to afford you immediate relief from fatigue. In order to guard yourself against weather; you must clothe yourself properly, but not so as to sweat; and you must take particular care to keep your feet warm and dry. The pace should be brisk in order to warm you, but if you should become cold, you should studiously avoid on your return going into a hot room, or near a fire, till some comfortable warmth has already been restored by motion within doors.

2dly. By employing some strong motion of the arms, among the different species of which, I would especially recommend the manual exercise with a firelock, which should be at first light, and after of the usual weight. This, also, should be used every day for half an hour or an hour, exclusive of the walking before recommended. With regard to every kind of exercise, it should be a rule to begin moderately, and increase the time and quickness as the powers improve; always choosing to employ it with rather an empty stomach.

With respect to remedies, I would advise that three leeches should be applied to each temple once a week; that every preparation of Mercury should be abstained from, and that the remedies in the annexed prescription should be constantly taken.

℞ Magn. Vitr. ʒij. Man. ʒj. Inf. Ros. ʒx. Acid. Vit. dil. gutt. iv. Ft. H. sing. auroris sum.

℞ Kali super. ʒijss. Sacch. ʒij. Scillæ recent. gr. xxiv. Aq. ℥vi. ℥j ter die cum Suc. Lim. inter efferv. s.

In a letter to Dr. P., it appears that Mr. E. S. "is quite a different person since he followed Dr. P.'s "prescriptions. His hand used to shake in writing, "but is now perfectly steady. He was much bled by "Dr. B. without any good effect, and none of his "remedies before did him any good." [Jan. 4, 1809.]

Case.—Nervous Complaints cured by Bleeding and Vegetable Diet.—Miss J., when seven years old, was accustomed to great quickness of feeling, talking in her sleep, redness of her cheeks, and frequent twitchings of her face and eyelids, always accompanied with pain across her forehead and temples, and constantly relieved by spontaneous bleeding at the nose.

For these disorders she was sent to Bath, were she bathed, drank the Waters, took some strong stimulant medicines, and employed the fullest diet. A fever soon ensued, attended with delirium so violent as to require great force to keep her in bed. In a struggle of this kind, she struck her nose against the bedstead, in consequence of which it burst out with blood, and continued to bleed copiously, in spite of every remedy, from ten at night till two o'clock in the morning. The delirium and fever almost immediately disappeared, and with them all the nervous complaints, from which she continued free for eight months, while she lived low, and frequently took aperient medicines.

Afterwards, for several years, she was again at times liable to headachs, with occasional bleedings at

the nose, which always for the time relieved her, and suggested the use of artificial blood-letting, which was attended with equally good effects. During this time she tried the Bark, but it always increased her headach.

At fifteen years of age, in consequence of the appearance of the menses, her complaints were relieved; which made her less cautious respecting her diet, and her complaints then returned. At this time she had frequent earachs, attended with purulent discharge. She then left off wine, and had recourse to a diet almost entirely vegetable; in consequence of which her earachs left her, and the complaints in her head were so much diminished, as not then to require any further blood-letting.

Some years afterwards, from violent frights, she had during several months great palpitation of the heart, with short cough and hurried respiration, which were relieved by Asafœtida; and she was afterwards, by the death of her father, thrown into a state of palpitation and inordinate sensibility, so that she could not bear the least noise or light. After this, she immediately became deaf in her left ear, and for three successive springs had suppuration in her right ear; which again ceased from vegetable diet.

It must not be omitted, that at one period of her life she had something like nettle rash about her face and neck.

When I saw her, in the year 1787, she had been accustomed to a very sedentary life, had almost constant coldness of her feet, costive bowels, a frequent

weight and pain about the forehead and eyes, and florid colour of the cheeks. She had a noise in her ears, exactly synchronous to the diastole of the carotid arteries, by pressure on which it was stopped. Her sleep was always heavy to herself, but she usually talked in it, and sometimes awoke with violent screaming, answering questions, but forgetting the whole the next morning.

Case of Nervous Affection.—Miss W.'s description of the early part of her complaints:

"I have never been able to read aloud for a "quarter of an hour without great exertion, and "always put down the book the moment I found it "hurt me. One evening in the beginning of March, "feeling I read with more ease than usual, and "not having an idea of the ill effects that would "ensue from it, I was induced to go on for more than "half an hour, till I became quite exhausted. I felt "very sinking the rest of the day, and the three or "four following ones. It then left me, but returned "whenever I talked much; and about three weeks "afterwards I went a long walk, was very much tired, "and grew weaker every day, till it was with difficulty "that I could walk up and down stairs. My voice "was reduced only to a whisper. By sitting quiet "all day my strength and voice gradually returned; "and in a fortnight I thought myself as well "as ever. I was then as cautious as possible, "using very little exertion. But that little was too "much, for I frequently lost my voice, and every time "was weaker than before, but by keeping quiet I

"soon recovered, till in the middle of July my voice "entirely left me, and with it all power of utterance."

What follows is the account of her medical attendant at Gloucester:

The loss of her voice was succeeded by an inability to walk, and an imperfect use of her arms; in other respects she was in apparent good health; in October 1807.

Miss W. was before this time generally a healthy person; her age about thirty; and all evacuations regular and natural. In the state above described, Dr. B. advised the Argentum Nitratum, and cold bathing.

She has employed these and an immense variety of other means, from none of which has she derived any benefit.

From the winter of 1807, a diminution of all the voluntary powers has been progressive, together with an excessive increase of sensibility; so that for several months past she has been unable to move any part of her body, except her hands a very little. She cannot see, nor can she endure the least light; so that her eyes have been continually covered with a bandage. She cannot hear distinctly; nevertheless, all sound is intolerable.

She has lately swallowed with the utmost difficulty even liquids. All solid food she is obliged to refuse. Milkand soup form her entire sustenance; and she can only sip a little of these at one time. When she is awake, her friends repeat the offer of them once in half an hour. The most gentle friction of any part of her skin produces an uneasy sensation of the stomach.

By getting down liquid cathartics, stools are regularly procured. She also passes a sufficient quantity of urine, which has been always very high coloured. Her pulse is excessively quick and small. The powers of her mind continue seemingly unimpaired; but it receives no communication from without, except by touching different parts of her hands and fingers, by which means her sister spells words, and thus slowly informs her of what is necessary for her to know. Notwithstanding the small quantity of her sustenance, she has not lost flesh. Her gums are very spongy. She lies perpetually in bed. All attempts, except to gently move her from side to side now and then, intolerably distress her. For the same reason clysters have long ceased to be administered.

[June 10th, 1809.]

Answer.

"Dear Sir,

"I am favoured with your letter respecting Miss W.; and I trust you will allow me to address you with freedom and candour on the subject of its contents. It places me under great difficulties; not by any means as to the best mode of treating the complaint, but how to convince the young lady and her friends that the case is to me a very common one, and that the measures which I am about to recommend have a salutary tendency. That in this case a thousand remedies have been ineffectually tried, I readily believe, not only on your word, but from daily experience; and I am perfectly persuaded that no physical remedies will avail, unless they are aided by a certain

moral regimen. Exercise of mind and body, and the exposure of both to the common irritations which exist in a state of human society, are, under the dispensations of Providence, absolutely essential to the well being of the whole frame; and thus the curse inflicted by the Creator on our first parents has been benevolently converted into a blessing on their posterity. But the blessing does not arrive to those who do not seek it: it must be attained by labour, and pain, and sorrow; and at the very instant when Miss W. gave up exercise, because it produced present inconvenience, she forged one of the first links of that chain of miseries by which she is now held in bondage. If, however, she expects ever to arrive at health, she must patiently travel back the road which she has hitherto pursued. The irritations of light and sound, and even muscular exertion itself, must be gradually admitted; and as self-indulgence has increased her sensibility to so morbid an excess, she must be content, in order to gain relief, to suffer the more, and make amends by perseverance for the want of immediate power. It should be impressed on Miss W.'s mind, that the longer she is without attempting these means, the attempt will be the more painful, and the effect more slow. I repeat that all this cannot be done without the infliction of much suffering on the patient; and the sympathy of tender and affectionate friends will strongly rise in opposition to what will be termed the cruelty of the attempt. I must, however, observe that these very sympathies, amiable and natural as they may appear, are the true

cause of the greater part of the evil. By encouraging the weakness of the patient, they confirm an indolent submission to maladies, which calm endurance and true fortitude would enable her ultimately to overcome. Perhaps I may be accused of inhumanity in these observations; but the case is as I have stated it, and it should be remembered that I do not make the law, but merely announce a law already made. With yourself, Sir, who are upon the spot, it must rest to point out to Miss W. the particular mode in which she may be gradually brought to bear the irritations essential to the due performance of the functions of animal life. If, however, you are told by her that they will produce pain, or fainting, or convulsion, or delirium, or loss of voice, or oppression of breathing, (effects which I have many hundred times seen arise under similar circumstances with no worse consequences,) and therefore that she cannot incur the hazard; or if, on observing more or less of these effects on actual trial, her friends discourage its repetition; I own I have no hopes of her recovery.

"The cure may indeed be aided by certain measures of diet and medicine. And here I must observe that so far as my recollection goes, I have never seen a patient so affected recover without previous emaciation; and I have therefore considered inappetency a most favourable instinct, which ought by no means to be opposed. All food and drink of a stimulating kind should be avoided; and it would be much better gradually to reduce the frequency of its administration, and to confine the nourishment wholly to sub-

stances of the vegetable kind. Spirits and all fermented liquors appear to me to be invariably injurious. Universal experience has pointed out the necessity of keeping the bowels, in such cases, regularly open. The occasional use of Calomel is often beneficial, and I would wish that Miss W. would, if possible, take the effervescing mixture in the annexed prescription thrice a day. The Squills should be gradually increased to the utmost degree short of nausea.

" ℞ Kali supercarb. ʒijss.

" Sacchari ʒij.

" Scillæ recentis g. xxiv. Contrit. adde Aq. ℥vj.

" Sumat ℥j. ter die cum Succo Lim. inter efferv.

" I would recommend that the head should be shaved, and every night and morning washed by a plentiful affusion of cold water. Once a week, unless any experience of prejudice to the constitution appears to result from their use, two leeches should be applied to each temple."

Case.—Good effect of Bleeding in Nervous Affections.—In September 1807, Miss B., aged about forty, came to Bath much afflicted with spasms in the stomach, attended with headach, flatulence, and great general debility. She had likewise lost (in great measure) the use of her right arm. Her complaints were supposed to have originated from suppressed gout. Her bowels were costive, and the extremities cold.

Several physicians had been consulted, and at this time she was ordered a generous diet with wine. Her medicines were of that kind called cordial, ner-

vous, and stimulant; and she occasionally used the warm bath.

In October, in coming out of a friend's house, her foot slipped and she had a severe fall. The head received an injury, and the temporal artery was partially divided; and, as it was some time before assistance could be procured, she lost a great quantity of blood. In consequence of the injury the head had sustained, she was kept strictly to an antiphlogistic regimen, took frequent purgatives, and was forbidden wine. The wound in the head soon healed, and she was much gratified to find that her spasms ceased, her headachs left her, and the use of her arm was in great measure restored. By continuing the same plan, her general health was very much improved.

Treatment of Nervous Disorders.—Miss E. R.'s complaints are evidently of that kind which is usually denominated nervous. Great numbers of persons affected with this species of malady come to Bath for the benefit of the Waters. For the first eight years of my practice, that is from 1779 to 1787, I treated these cases according to the plan which was then universal, by tonics, stimulants, and full diet. The result was, that only here and there one of my patients recovered, the event in the far greater number of cases serving to confirm the commonly received opinion, that nervous diseases were the disgrace of the medical art. The success of a different plan induced me gradually to abandon the old one, in which I had been educated, and which is still sanctioned by general authority. This plan I have con-

tinued to pursue for one and twenty years; and having fairly tried both to an extent which few persons can have had an opportunity of equalling, and being every day a witness to the effects of the common means in other hands, I think myself fairly qualified to judge of the comparative effect of the two methods.

I shall, in this place, consider the case of Miss E. R. merely in a practical view. The common mode of treatment is by tonics, stimulants, and full diet. I, on the contrary, find the patient's recovery best promoted, and the higher degrees of the malady, such as convulsions, mental alienation, and even extravasation itself, prevented by evacuation, by the use of what are called sedatives and refrigerants, and by low and sparing diet. It is in fact by means producing evacuation and debility, that nature herself cures such diseases. Patients bleed at the nose, are affected with ptyalism, with sweating, with purging, with loss of appetite, with constant vomiting, or with other symptoms or changes of disease. Under these circumstances there generally ensues an emaciation which alarms parental fears, and stimulates medical officiousness; but under which the symptoms are always alleviated, and, unless the natural process is artificially counteracted, at length gradually removed.

This process is now happily accomplishing in the case of Miss E. R. She is become thinner, the greater degrees of the disorder have subsided, and the experience of every day convinces her that all her complaints are aggravated by taking food. Let that instinctive feeling be obeyed. She has no dyspepsia

or indigestion, but the stomach suffers merely by an irritability, which it has in common with the rest of the frame, as an effect and not a cause. In her case, water and vegetable matters of the various kind within her reach are fully sufficient for the support of all the functions of life; and any other diet would only increase irregular determinations of blood, and exhaust, instead of invigorating, the constitution. Great care should be taken to keep the bowels regularly open. Not a day should be suffered to pass without some gentle evacuation; and I advise that two grains of Calomel should be given once a week, at bedtime, in addition to the usual aperient. The effervescing draught should be taken twice or thrice a day. If the head should be affected with pain, weight, or giddiness, three or four leeches should be applied to the temples. This remedy may be repeated without fear once in a week or ten days, for many successive weeks. While the weather continues warm, a shower bath, consisting of one gallon of boiling water mixed with three of cold, should be used thrice a week before breakfast. It would add much to the effect of this remedy, if Miss E. R. would suffer her hair to be cropped. Hot rooms and late hours should be avoided; and the feet and legs kept warm and dry. But among the various measures, scarcely any thing is so essential as exercise. The mind may be amused, and the skin cooled, by riding on horseback; but walking is the exercise to which I would chiefly trust for the production of bodily and mental vigour, and all the beneficial effects of equal circulation, and this

should be employed in the cool part of *every day*, as far as Miss E. R.'s strength will permit. If the arms also could be exercised in playing at battledore and shuttlecock, or in any other method, so much the better. No means for the relief of such complaints can be *speedily* effectual; but I know that these are the best which the nature of the case will admit. They should be long and faithfully pursued, notwithstanding apparent difficulties; and Miss E. R. must not be surprised, nor her friends alarmed and discouraged, if in the course of her recovery she should suffer much more of headach, and of muscular weakness, than she now feels. These are the usual effects of the natural progression towards health.

She was cured by these means. [May 17, 1809.]

Treatment of Nervous Disorders.—It appears to me that the whole of Miss L.'s complaints arise from irregular action of the vessels, affecting in succession different parts of the system. In the last attack there was evidently congestion in the system of the liver, which excited a febrile action in the general constitution. On various other occasions the chief determination has taken place to the vessels of the head. If we attend to the phenomena of the animal frame, we shall find that voluntary muscles lose their strength, and become subject to automatic motions from disuse, and presume it to be from a similar cause that indolence produces a similar effect on the whole vascular system, which becomes weak and unduly irritable when it has been long deprived of the stimulus of the blood, urged forwards through the

veins by the action of the muscles. This same indolence also debars the constitution from the salutary influence of pure air, and perhaps of light, and reduces it to the same state of weakness as that of a plant shut up for the winter in a warm and close room. A corresponding effect is at the same time produced in the various organs of sense, which always become susceptible of painful impression from slight causes, in proportion as they have ceased to be stimulated. From these positions, the truth of which may be established by an immense mass of irrefragable evidence, I infer that we shall in vain look for any mode of curing Miss L.'s complaints till we seek it in the simple and habitual process of muscular exertion in the open air. When we speak of the exercise of airing in a carriage, or of riding on horseback, we greatly deceive ourselves. This may be clearly inferred from their effect; for patients will bear the process of airing or riding for some hours without fatigue, who would suffer insupportable lassitude from walking even for a few minutes; and it is obvious that as the great aim of exercise is to urge forward the blood by pressure on the veins, this cannot easily be effected by the exertion of the muscles of another animal. The body, therefore, must be exercised by means of its own muscles; and it matters not how long Miss L. is in arriving at any considerable power in this respect. She may be assured that if she will begin with a few steps, and uniformly persevere to the extent of her strength, regardless of the present fatigue which may follow her attempts,

the power will at last come. It is common in such cases to recommend a nourishing and stimulant diet. I have always found this plan injurious. Strong persons can bear strong stimuli without injury. To the weak they must be administered with the utmost caution. On such constitutions superabundant nourishment acts like poison. It produces present excitement, which always ends in proportionable debility. It is, indeed, happy that in these cases there is generally more or less of aversion to nourishing or abundant food, and a sense of immediate inconvenience and suffering from its use. The stimulus of fermented liquors does not always produce similar effects on the feelings; but the constitutional consequences are equally mischievous. I would therefore advise Miss L. to abstain from fermented liquors; and to take animal food only once a day, and then very sparingly; and I would wish that she should never be urged to eat any food, or any quantity of food, to which she is averse. Her body and limbs should always be guarded against cold by sufficient clothing; but the heat of fires should be cautiously avoided. She should always go to bed and rise early. Long lying in bed, and even the constant indulgence of a sofa, more especially with the feet in an horizontal position, are among the kinds of indulgence which I condemn, and from which it is essential that Miss L. should be gradually weaned. The more immediate administration of medicine does not form a part of the plan of which I proposed to treat in this letter."

Complication of Nervous Headach with Dyspepsia.—Mrs. M., a married woman, of about the

middle period of life, had been long affected with the various symptoms of dyspepsia, and with most violent headachs, which had long resisted all the means of relief which experience had usually shewn to be the most powerful in such cases. The fact was, that the affection of the head was always aggravated by those remedies which tended to relieve the dyspepsia; and the dyspepsia was greatly increased by every thing, which by its refrigerant qualities abated the disorder of the head. Under these circumstances she came to Bath, and from the internal use of the Waters found her stomach almost cured, and the affection of the head greatly augmented, notwithstanding all possible care was taken to employ them with moderation, and to keep the bowels in a lax state during their exhibition.

It being now sufficiently obvious that the disorder of the head was by no means dependant on that of the stomach, I thought it most advisable to adopt an opposite course, and neglecting in a considerable degree the stomach, to employ the most powerful means of curing the state of the head. Purgatives, therefore, were continued, the diet as much as possible lowered, wine and other fermented liquors and spirits wholly interdicted, refrigerant medicines employed, and blood frequently drawn from the head, either by leeches or cupping. By these means, the complaint in the head was removed; while at the same time the stomach, as there had been too much previous reason to apprehend, became considerably worse than it had before been.

I now turned my attention to the stomach, left

off the refrigerants, continued the aperients, permitted a larger proportion of animal food, still however interdicting spirituous and fermented liquors, ordered a moderate quantity of the Bath Water, with some absorbent medicines, and occasionally repeated the application of leeches. Exercise was, also, habitually taken as far as the patient's strength would permit. Under this plan the stomach was materially relieved, and the affection of the head did not return.

Another case of a somewhat similar kind was that of the Duchess of G., who, to very weak digestive powers, had superadded most violent determination of blood to the vessels of the head, arising from sudden and vehement palpitation of the heart, in which the pulse would often reach 136 beats in a minute, and the face was excessively flushed and hot. All tonics and stimulants increased this determination; but after the plethoric state of the habit had been removed by copious evacuations of blood by cupping, then the Bath Waters no longer produced an injurious effect on the head, and were extremely beneficial to the stomach.

Effects of Drinking.—Mr. S., aged thirty-four, accustomed for several years to drink very hard; in the former part of life strong and healthy, and much stouter than now. He began to have a bad appetite about four years ago, and by degrees the symptoms under which he now labours. There was also at first a short cough through the day, with some expectoration. About three or four years ago, soon after the first symptoms, a trembling began in his limbs, with weakness of knees,

which have more or less increased ever since, and are now worse than ever. In the early part of life accustomed to headachs, but not for many years. At present has, in addition to the other tremors, which vary according to agitation, especially from seeing acquaintance, but not from exercise, unless it fatigues him, hesitation of speech and stammering, which he never had before. The head and all are equally affected with the tremors. The tremor of arm is most on the right side. Has occasional pain in the shoulders, especially the right, which he does not perceive at night, and lasts only a day or two. Has also had decided rheumatism in his shoulders. Sleeps well from a wine-glass and a half of rum, mixed with water ; otherwise would sleep ill. Bowels very costive. Some little hesitation occasionally as to ideas as well as words. Urine generally very high coloured and sparing, but at other times very pale. Appetite continues very bad, and the food lies very heavily on his stomach. Never eats meat. Drinks in general ale and porter. Tongue quite moist ; but has some degree of thirst. Used tohave some soreness in mouth and throat on drinking any extraordinary quantity of wine, but not for nine months past. Pulse in wrist 96 and hard. In the carotids very strong and bounding, especially the left. Feet apt to be cold and damp. Has lost a good deal of flesh. Drinks a pint of wine daily ; and occasionally spirits, mostly diluted, to what extent I cannot learn. Has also, for four years, been taking every kind of cordial and tonic which medical invention could suggest. From all

this, he is constantly becoming worse, While he was at the sea-side for six months, ending four months ago, he drank less spirits, and was continually out in the air; he had then a better appetite, and was in other respects essentially better. He labours, however, under the unfortunate delusion, that he cannot bear to live without strong liquors, and that epilepsy would be the consequence of such abstinence.

April 7. Complains of a sense of pressure about the hypochondria, producing difficulty of breathing, and is very much out of breath, from violent action of the heart, in going up stairs. He has no dyspepsia; and fruit agrees well. Stools and urine of natural colour. Appetite very bad, but he says, that spirits, little diluted, cause him to digest. Madeira and Sherry often make him sick, and Port, his usual drink, occasionally turns acid on his stomach. I cannot feel any hardness about the abdomen in any part, but the aorta beats violently.

Copy of a letter to Mr. S., April 8, 1809.

"The nature of your complaints is too clear to admit of a doubt. By the long continued use of inebriating stimulants, the functions of all the vital organs are impaired, and you have recourse to the daily repetition of stimuli in order to remove the weakness occasioned by those which preceded.

"This process must soon have an end. How long will you continue to trust the delusive expedient? You fear to lay aside a practice which gives you a temporary power of digestion, or a few hours sleep, forgetting that, ere a few weeks have elapsed, it will

utterly incapacitate you from taking food at all, and infallibly lead you to the sleep of death. I would still flatter myself that your constitution is far from being in an irrecoverable state, and that you may be disposed to adopt, as the only condition of recovery, principles more worthy of the dignity of a man, than the apprehension of present sufferings, or the desire of present gratification.

"With this view, I recommend to you for a few days wholly to abstain from wine and every other species of fermented liquor; or to drink every day before dinner, and again at bed-time, two table-spoonfuls only of brandy, mixed with an equal quantity of hot water, without sugar.

"I am by no means anxious about the quantity of your food. It is evident to me, that the less you take the better. If you were to increase the quantity, the constitution would not know what to do with it; and dropsy, or some other fatal effect, would probably follow.

"I would wish you to go to bed and rise early, and to walk out a short distance several times every day, taking care to keep your feet warm and dry. Much fire in your sitting or sleeping room should be avoided. Of medicine, at present, I recommend you nothing; but I wish to see the effect of this change of diet, and judge as to its future modification."

April 13. Has left off spirits entirely, by his own wish and my concurrence, drinking only four glasses of port wine daily, with a pint of ale mixed with Soda Water at dinner. At first could not sleep, but

for these two last nights has slept better; though I find that he has drank cowslip wine at night. This poor man's mind, I fear, will not let him recover.

Strange Modification of Nervous Complaints, cured by Bleeding and Squills.—Miss T., aged fourteen years and a half, small and rather pale, the daughter of an East-Indian woman by an European, said to be sensible and not spoiled by indulgence, disposed to great indolence, especially for four or five months past, and who began to menstruate nearly a year ago, has been for two or three years past subject in the summer to bleeding at the nose, and about a fortnight ago had a slight pain in her left side, and, without cough, expectorated two or three times a day a little clear blood, which seemed not to have come from the nose at that time. For these symptoms she took saline medicines. She was very costive.

On the 4th of June, she went to an exhibition of fireworks, at which she staid late at night. On the morning of the following day, she complained of a great weariness in her limbs, and in the afternoon was seized with violent pain, weight, and giddiness in her head, so that she could scarcely hold it up, and was apprehensive of falling. Leeches were applied to the head, and blisters behind the ears and to the side, where some pain still remained, and she took cooling and opening medicines. These means in some degree relieved her, but on the 6th she had violent pain in her bowels; soon followed by spasmodic motions of the hands and fingers, as in scratching, which continued for some hours, with convulsive

motions of various parts, and after ceasing more than once returned. On the 7th, at eleven at noon, she had a similar attack, succeeded by the following circumstances. As she lay on her back, rather towards her right side, she threw the left arm and body backwards at measured intervals, exactly keeping time with the following notes, which she sang out with a strong and clear voice.

This scene was repeated at very short intervals, and at very regular periods, every day from eleven till three at noon, and from eight to ten at night, leaving her much fatigued; after which she slept well.

I first saw her on the 13th, when the song had ceased; though I frequently heard it afterwards. She had then, by fits, contractions of the arms and fingers, which I immediately stopped by compressing the left carotid artery, which happened to be nearest to me. I learned that she was fond of music, and both played and sang; but she could assign no reason for this song, but that "it was irresistible."

I ordered ten grains of Extractum Colocynthidis compositum to be taken at bedtime, and repeated the next morning if necessary, and a draught of Citrate of Potash, and Tincture of Castor twenty drops, and Tincture of Squills ten drops, every six hours.

June 14th. The bowels have been opened. She had one or more fits, such as I find have occurred

before, and in which she often rubs her nose, grinds her teeth, and is convulsed; but does not lose her senses, though her utterance is imperfect, pointing with her hand so as to make known her wants.

Other circumstances as before.

℞ Potassæ Nitratis ʒj.
Syrupi Scillæ ʒj.
Misturæ Amygdalæ ʒx. Ft. Haustus, 6ta quâque horâ sumendus.

These medicines were continued till the 16th, without any apparent effect or change of symptoms; when half a drachm of Syrup of Squill was ordered to be added to each draught, and six ounces of blood were directed to be taken from the arm the next day at eleven o'clock.

June 17. Yesterday afternoon she complained of pain in her left temple. At half-past eight, she had a slight attack of the usual song, which lasted for an hour, followed by more than common pain in her head. She slept tolerably. At eleven to-day she lost, by my direction, five ounces of blood, and the attack has not yet come on. Her head is free from complaint, and her pulse natural. Tongue rather dry and furred. Urine pale. No motion.

Sumat haustum ad formam ultimam 6ta quâque horâ.

June 18. The blood is of a dark colour, and of a good consistence; and the first cup has on its surface a little crust of coagulated lymph. She sat up yesterday from half-past four till half-past seven, and had a slight return of the regular motion and song,

from eight till nine, followed by faintness, but has had no return to-day. Urine yesterday less pale; to-day more so. She had a restless night with much moaning, and complains that her head has been in great pain to-day. Tongue clean. Pulse 54, and somewhat irregular. No motion.—Pergat in usu haustuum. H. s. sumat Extr. Col. c. gr. iv.

June 19. She sat up yesterday for three or four hours in an adjoining room. There has been no return of the eccentric movement or song, and she has had a tolerable night; but for an hour or two has been restless, and has all the morning complained of pain and soreness of her head. Urine partly pale, and partly otherwise; that made at ten this morning of a good colour. Tongue rather brown towards the root. Pulse 96 and a little irregular, but soft.—Pergat in usu haustuum. Sumat pilulam statim et 4ta quâque horâ donec dimiserit venter.

June 20. She had three motions yesterday, but has had none to-day. From eight till half-past nine last night, she had a return of singing, preceded by dimness and dazzling of sight, and accompanied with considerable heat; on which, according to directions left by me, seven leeches were applied to her temples, and soon relieved her. Urine made just after the fit was high coloured. She slept well, and her head to-day has been much better than before. Tongue as yesterday. She has taken three draughts, and had no sickness. Pulse 72, and intermitting every 7th or 8th stroke.—Pergat in usu haustuum. H. s. sumat pilulam aperientem solitam.

June 21. She was well enough yesterday to play a little on the piano-forte. At the usual time of her fit she was very uncomfortable, cried, and made pale urine; but had no farther symptoms. Her head this morning being heavy, four leeches were applied to her temples, from which she found immediate benefit. She has had one motion this morning, and her urine made at eleven to-day is of the natural colour. At twelve, she had a slight degree of sickness. Pulse 60, and irregular.—Pergat in usu medicamentorum.

June 22. She has taken only one draught since yesterday, had a little return of the singing at eight last night, and again at eleven this morning; when, conformably to my directions, she was bled to the quantity of five ounces, which immediately removed the fit. No stool. Urine, after the attack last night, of the natural colour, with a mucilaginous sediment. Somewhat more pale to-day.

Crassamentum less dark than the former, of strong texture, and in one of the vessels having a crust of somewhat cupped coagulated lymph of moderate thickness. Skin cool. No sickness. Head well. Tongue as before. Pulse 54, and rather irregular.—Pergat.

June 23. She has taken four draughts, and had slight sickness, but no motion. Her night was rather restless; but she has had no return of fit, and is free from any complaint in her head. She has a good deal of pain about the right scapula; and her nose itches very much. Tongue as before. No motion.

She appears to be in every respect much better, and has been up in the adjoining drawing-room ever since eleven this morning. Pulse 56, and irregular. Let her continue the draught, and take an additional pill.

June 24. She has taken four of the squill draughts, and was a little sick this morning before the operation of the aperient, which has acted twice. Yesterday she continued up the whole day, but had a restless night, with disturbed dreams, without any assignable cause. She complains of palpitation of the heart. She has had no return of the fits, and her head is tolerably well; but she cannot bear any noise. Tongue rather furred. Urine pale last night, less so to-day. Pulse 52, and irregular.—Pergat.

June 25. She has taken three draughts, and was sick this morning, but not so as to vomit; sat up till eight last night, and says she was quite well yesterday afternoon; but had a restless night. Tongue rather furred. Feet warm. She has had no return of the fit, and her head is free from suffering. Urine, made last night, of a natural colour. No stool. Pulse 48, and nearly regular.

Pergat in usu haustuum.

Hac nocte hora somni sumat Extracti Colocynthidis compositi gr. iv. et repetat cras primo mane.

June 26. She has taken two draughts only; and has been sick ever since seven this morning, and vomited a good deal. Her bowels have been twice opened by one pill. Night much as before. No headach. Urine, last night, of the natural colour.

No return of fits. Pulse 44, and slightly irregular.—Omittr. haustus. Sumat pilulam aperientem.

June 27. She has had no motion from one pill. Has cried a good deal, but has been free from sickness and all other complaints. Pulse 50, and irregular.

H. s. sumat pilulam, et repetat cras primo mane.

June 28. Urine last night natural. She slept much better. The pills have operated very much to-day. Pulse 54, and nearly regular. She is perfectly well.

Let her continue her opening pills, and go out to-morrow.

June 30. Her bowels have been regularly opened by one pill. She has walked out these two days without inconvenience; has slept well, and is otherwise without the least indisposition. Pulse 54, and slightly irregular.

Miscellaneous Remarks.—It is a strong proof of the power of congestion in the vessels to produce spasmodic affections, that the *hysteria*, the chief symptom of which is a spasmodic motion of the alimentary canal, often attends in females disorders of the stomach accompanied with vomiting of blood, pain and sickness preceding, and all ceasing after the blood has been vomited, often in very large quantities.

In *hysterical delirium*, the eyes appear to look on vacancy, and the pupils dilate and contract irregularly, while their axis is not changed.

In *hysteria*, the paroxysms are often produced by surprise, through the intervention of increased action of the heart. [1814.]

In *hysteria*, &c. the moment syncope comes on spasm and convulsions cease. Those in Miss M. from compressing the inner part of the upper arm.

In *Hysteria*, and in Mrs. C., under headachs evidently owing to fulness of vessels of head, with constitutional disposition to bleeding at the nose, which has also occurred of late in small quantities, and, a week or ten days ago, was artificially stopped, the urine during the fit is pale and in large quantity. Why? Does it arise merely from the stimulus of the nerves supplying the kidnies, from the stimulus on the brain, or from an increased determination to the arteries of the part, and therefore increased secretion from the uriniferous glands?

Hysteria may arise from affections of the uterus, bowels, or any other part, if the intermediate effect is increased action of the heart, determining more blood to the head. Perhaps, also, if the vessels of the brain are thereby relaxed or debilitated, so as to admit of being unduly filled by the common vis a tergo or action of the heart.

Resemblance of Hemiplegia to Hysteria.—Mr. G., æt. 59, a very stout fattish man, a farmer, rather a full but not intemperate liver, was in June seized with hemiplegia of the left side, without any previous headach or vertigo, but accompanied with some confusion of head. The arm was first attacked, then in half an hour the legs: impaired sensibility as well as motion. Got tolerably well as to motion, but not sensation, when he came here, Nov. 10. The first attack was followed the next day by convulsive

motions of the muscles of the abdomen. Last night about eight had another attack on the side, without the least affection of the head. No catchings or convulsions, but no sleep, and made almost *a large chamber-pot full of very pale clear urine.* Pulse between 90 and 100, and full. Head hot. Tongue dry and parched. Urine, to-day, of natural colour. No sickness in either attack, or any loss of mental functions.

Hysteria cured by Affections of Mind.—A carpenter came to me in great distress, complaining that his daughter, a girl of fifteen or sixteen years of age, was subject to fits, which seized her several times in the day. He added, that he could not conceive what could be the reason of this malady, for that both he and his wife had made it a rule never to contradict her, but uniformly indulged her in every wish. Having been long accustomed to observe what share moral causes had in producing or aggravating these complaints, I urged this man, as he valued the future happiness of his daughter, to change his method of proceeding, and, instead of this absurd indulgence, to give her a good shaking, or else to throw a bason of cold water in her face, immediately on the approach of the next fit. The fond father pleaded the inhumanity of the measures; but at length left me, promising to comply with my injunctions. Some weeks elapsed before I again saw him. He then told me, that the very same day, when a fit threatened, he had not exactly gone to the extent of my advice, but had spoken rather roughly to his daughter, saying that she must exert

herself, for that he would bear these attacks no longer. He added that she had expressed great astonishment at this treatment, but never had another fit!

A very few days afterwards, I was sent for in the night by a lady, one of whose daughters, about ten or eleven years of age, was suddenly seized with an hysteric fit; immediately after which her sister, a year or two younger, was attacked with a similar malady. I told them, that this was a disease I was determined never to permit; and that, on the next attack, I should be obliged to put in practice a remedy of so painful a nature, that the thought of it filled me with horror; but I trusted that there would be no return, and that the remedy would be therefore unnecessary. This conversation made a great impression on the minds of my young patients. No relapse occurred; but their mother assured me that there was a frequent disposition to attacks, which they had striven very hard to resist, and had happily succeeded.

Hysteria, simulating Paralysis.—Miss A., aged 24, fat, and of a fair complexion, only child of an extremely wealthy family, and always subject to complaints which are called Nervous, has been for a considerable time affected with the following symptoms, which attack her at different parts of the twenty-four hours, and almost always occur on the day of menstruation, shortly before its appearance. There is, first, a sudden palpitation of the heart, without any assignable cause; which is soon succeeded by some confusion of the head, and great apprehension and tremor, together with numbness, but no incapacity

of motion, of her right arm. In a short time her face flushes, and a sense of a ball rises into her throat, accompanied with distention of the stomach by wind, eructation of which affords her relief. In about three quarters of an hour the symptoms subside, leaving no disorder whatever of the head, but great languor. Her bowels are usually disposed to costiveness, which however has been for a considerable time past constantly obviated by opening medicines. These indeed have been rendered necessary by another malady, to which she has of late been liable, chiefly a few days before menstruation; which is a violent pain about the sacrum and rectum, unaccompanied by any external swelling or discharge, but attended with such a soreness as almost to render her incapable of sitting. From this latter complaint she is now tolerably free, though my visit to her this morning was in consequence of an attack of the kind before described, which she considers as a prelude to the menses this evening. The attack has now subsided, so as to leave no apparent marks of indisposition, except some hurry of the pulse.

The malady has been attributed to indigestion, of which however I can perceive no evidence, her appetite being good, and her stomach not incommoded by a moderate quantity of any sort of food or drink.

Temporary Paralysis from Hysteria.—Miss E. A., aged $19\frac{3}{4}$, with light hair, fair and very florid complexion, and moderately fat, has been many years accustomed, on any agitation of mind, which has often occurred from the slightest causes, such as knocking

at the door, to suffer violent palpitation of the heart, so that she is unable to speak; almost immediately after which there ensues a choaking in her throat, difficulty of breathing, with convulsive motions alike in all her limbs, sometimes accompanied with crying, which continues for about ten minutes. Before the cessation of these symptoms there always comes on an insensibility, of one side only, like in quality, though greater in degree, than that which occurs in what is called a sleepy foot or hand. It sometimes affects the whole side from head to foot, and when least, never fails to attack the hand and foot together. It is accompanied with great coldness, and want of muscular power, in the parts affected, so that she cannot hold any thing in her hand. She is for a time insensible; and when she comes to herself, her head is extremely confused and giddy, and she becomes sick, and has straining to vomit, which she encourages by drinking warm water. The chief of the numbness goes away, with a tingling, in about a quarter of an hour; though her limbs do not for the whole day feel in their usual way. At first, these attacks came on sometimes twice in a week, and affected either side indiscriminately; but of late they have occurred much seldomer; and the numbness is only in the left side, always in the arm, and more rarely in the face. Her last attack was about a month ago. She is not subject to headachs; though at times they precede attacks, and are then in a very violent degree. She is always best after menstruation, which is in every respect regular; and between the attacks she has occasionally slight

bleedings at the nose, sometimes six or seven times in a day. She knows no cause for the first attack.

Her bowels are costive, and her appetite is small. Her attacks are brought on by what disagrees with her stomach; as suppers, which oppress the stomach, and make her sick. It is obvious, however, that she has no real dyspepsia, as fruit and acids do not disagree with her. Violent exercise has also brought on a paroxysm; in consequence of which she has almost wholly discontinued exercise on foot. She sleeps well. Her tongue is clean. Feet generally cold, even in summer. Skin of her hands cold. Pulse 72, and rather weak; that in the carotid strong. In addition to these complaints, she has an occasional short cough, which is dry and hard.

A few days afterwards this young lady had an attack of her disorder, of which the following were the symptoms. About two in the afternoon, while sitting at work, without any previous indisposition, she was seized with numbness, tingling, and incapacity of motion, first in her right hand, and then quickly in succession in the right thigh, leg, foot, arm, face, tongue, and throat, so as to prevent articulation, as well as motion of her side. The fit was at first unattended with any affection of the head; but there soon came on a giddiness and violent pain over her left eye, accompanied with sickness, at first without vomiting. The numbness continued above an hour, with great coldness of her feet. In a quarter of an hour after the accession of the giddiness, she went to sleep; and an hour after, when she awoke, the

numbness was gone, but the giddiness, pain in her head, and sickness continued. She then vomited up a great deal of bile; after which the giddiness ceased, but the headach continued till night when she went to bed. This attack was unaccompanied with any choaking in her throat, and was otherwise less than usual. The next day she was free from complaint. Previously to the last paroxysm, she had frequently felt an over distention of her stomach, against which she had not taken due pains to guard, her bowels not having been open more than once in two days.

True Mental Insanity.—What is commonly called *insanity*, is the result of a *bodily disease*, a disease of the brain, in which all or certain impressions have not their just relative strength, so that recollection cannot correct appearances or phenomena: hence false conclusions, and improper conduct. There is an error in the vividness of sensations or recollections, relatively to those of the one or the other.

True mental insanity is that in which, without bodily disease, a man from prejudice forms conclusions, and employs conduct, totally contrary to truth and personal experience, that is, opposite to reason; and probably the greatest example of this real insanity is that in which a person attempts to prove to you by reasoning, that, on certain occasions, you ought not to reason.

Mania, being often an effect of the causes producing hysteria, epilepsy, hemiplegia, and apoplexy, with the two first of which it often alter-

nates, may in those two cases depend on a previous increased impetus, which may be either general or local, and may shew no signs on dissection except such as may be the effects of a previously existing increased impetus, or morbid state, of the circulating system, which state may itself at the time of death have gone by and disappeared.

The following are the appearances which may indicate the state of present increased impetus,—preternatural fulness of vessels; inflammation.

And those which prove that such an impetus has existed, though it may for an indefinite period be past, —preternatural fulness of vessels, thickening of parts, opacity, hardening, extreme softness, ossification and exostosis, rupture and extravasation of blood, suppuration, serous or other excessive extravasation either in the cavities, substance, or between the membranes themselves, or the dura mater and cranium.

Insanity and Delirium.—The first effect of increased determination is to produce morbidly quick perception, and all the immediate symptoms of over-excitement. As the disease advances, the change produced on the brain causes the excitement to be preternaturally diminished, and the trains of thought to be more slow: and this may happen, notwithstanding the exciting cause may continue equally to act, and to be gradually destroying the specific functions of the brain, and other parts of the frame.

In some cases an alternation of these states may, from various causes, take place. Persons become

addicted to particular trains of thought from habit; which, according to the frequency of the recurrence, under different circumstances, produce more and more associations with new ideas. This takes place more especially under states of undue sensibility in the Brain, as in cases of Mania, in which the transitions are very quick, so that the exact relations of complex ideas are not very accurately perceived. Now as scarcely any trains of thought, or ideas, occur, which do not consist of considerable variety, or are more or less complicated, scarcely any occur which have not some analogy or resemblance with other complex ideas or trains. Thus certain amiable or unamiable affections may be conceived or established. A person subject to peevishness, fretfulness, and discontent, will extract cause even from felicity. Mrs. A. C., after a long illness, had an uncommonly good night, better indeed than she had had at all. She asked whether her illness was gone; and on being told that, though it was better, it was not gone, she became very fretful and uneasy. The difference between good and ill temper depends on this sort of association.

It may happen, also, that when any disappointment occurs to an irritable mind, it may increase the general irritability, so that indifferent or even pleasurable (generally) events may produce painful irritation.

The order of ideas as to place and time is not always guided by experience. This difference constitutes falsehood as contradistinguished to truth, imagination, and insanity; of which latter, however,

it is only a part. The distinction between imagination and insanity is, that the deviation from experience or nature is perceived in the first case, and not in the second. Falsehood may arise from erroneous views; from forgetfulness; erroneous view from prejudice, haste, &c.; so that judgment which should only correct experience, is not substituted for it.

In *Insanity*, a man shall have an end in view, as, for example, that of establishing his own supremacy; and his views of all the points leading to that end shall be the most rapid and comprehensive. When he shall, by grave and serious means, have obtained his end, he shall laugh at you, and utterly abandon, without any further application, the purpose he professed to answer by obtaining the means. [1814.]

The difference between *Fatuity* and *Mania* or *Delirium* seems to consist in this, that in fatuity all impressions are too weak; and in Delirium or Mania all or some are too strong.

Hard brains, found in persons who have been long *maniacal*, are probably a species of schirrus, from long undue fulness of vessels.

Effect of moral Causes on Mania.—The appearances which occur in the brains of maniacs after death are such as probably arise from a great degree, or a long continuance, of the malady. They die only when the vital principle is exhausted by the action of the cause on the brain or rest of the body. In this extreme state moral means might, *à priori*, be expected to have no highly salutary effect. But in earlier stages, when causes of a fluctuating nature are operat-

ing, which had not then gone to the extent of irrecoverable disorganization, it is equally obvious that the patient may be benefited by the operation of all those moral means which tend for the time to diminish the violence of paroxysms. This Haslam himself is obliged to allow, when he speaks of the injury which persons receive from the society of friends. So in the worst cases, moral irritations do obviously tend to increase the state of bodily disease, not only in mania, but on other occasions, as sudden agitation of mind will produce relapse, or increase the actual symptoms of rheumatic, pleuritic, or hepatitic inflammation, and more especially increase all those diseases which depend on determination to the head.

Appearances of Disease in Epileptic and Maniacal Patients, not necessarily or probably discoverable on dissection in certain cases.—If it be true that Hysteria or Epilepsy are diseases of the brain, usually depending on increased impetus of blood on brain perhaps in a state of predisposition, which alone, without that impulse, would not produce those diseases, we may easily understand why, in the intervals, a person may be in perfect health, and why dissections often shew no appearance of disease whatever in the brain. On this principle, indeed, we should not be able to see any reason why, if a person dies in the interval of fits, that preternatural fulness of vessels, if it were necessary to the production of the symptoms, should be discovered ; unless it should by chance have produced inflammation, or any of its effects, such as extravasation, thickening, ossification, &c., which are

only accidental, and not essential to the existence of the epileptic or hysterical symptoms.

So, also, if a patient were actually to die of the epilepsy, we ought not to expect always to see preternatural fulness of the vessels; because death is generally a rather slow process, which may be supposed to arise from the collapse, or, in the Brunonian language, the indirect debility, of the brain, which would probably exist after the undue stimulation by excessive determination of blood had ceased.

If epilepsy is sometimes connected with ossification, &c., it may be doubted whether this state is not as often an effect of increased impetus as a cause of it. But if we admit it as a cause, it is evident that it is only a cause of predisposition; because patients in whom it is found shall have intervals between their epileptic paroxysms, in which they enjoy a state of perfect bodily and mental health. It is therefore probable that even this state may require, for the production of epilepsy, the coincidence of some other cause, which I conceive to be increased impetus of blood in the brain, which indeed, under particular circumstances, this very mal-organization may have a tendency to excite.

The effect of this coincidence is, I think, most strongly illustrated by the case of Mr. W., in whom the bodily and mental powers were long impaired by the pressure of the broken dentatus process on the medulla oblongata, but in whom, from a large spontaneous bleeding from the nose, the stimulus of mental impression on the muscles of the thighs, legs,

&c., or, in common language, the voluntary motion of those parts, was for a short time restored.

If I am asked what evidence I have that increased impetus of blood will produce Epilepsy, I answer:

First, Because I observed hysteria, convulsions, &c., actually produced in Miss M., by increased action of the heart, and perceptible fulness of the vessels of the head always immediately consequent on that increased action; and because I could infallibly relieve them all by interrupting or diminishing the flow of blood to the head, by pressure on one or both carotids, and could renew the symptoms in an instant by removing the pressure.

Secondly, The resemblance between epilepsy and hysteria, and their alternation in a great number of cases; so that epilepsy appears to be only violent hysteria, and hysteria a smaller degree of epilepsy. So of other convulsions. See many of my cases.

As then I discover the actual existence of an adequate cause in one case, I have a right to presume its existence as an adequate cause in others apparently similar, where another adequate cause has been hitherto, after the minutest investigation, indiscoverable under similar symptoms or circumstances.

What has been said with regard to epilepsy, will probably, also, apply to Mania, where there are perfectly lucid intervals, however violent the paroxysm of madness may be. The condition producing this effect, whatever it may be, must evidently be transitory. In Miss M. the fits of mania went to a great height, and that they arose from a temporary determination

of blood to the vessels of the head was evident; for I could in an instant change the whole train of thought, so as to destroy all consciousness of the trains which preceded, and restore perfect calmness, with new successions of ideas, &c., by pressure on the carotids, and renew the maniacal state by removing the pressure.

No one, therefore, could reasonably expect to find fulness of vessels, in any preternatural degree, in maniacal persons dying in lucid intervals; nor would it be reasonable to conclude, that one should in such cases discover any organic change, whatever might have been the duration of the malady.

Such cases, therefore, so far as medical (not moral) causes are concerned, would still afford a hope of cure, especially from mechanical means of preventing undue determination, as by tourniquet, tying up the carotid, &c.

This conclusion as to mania is strongly illustrated by the case of Martha S., (May 30, 1813,) a maniac, who died in the poor-house of Walcot, and in whose brain there was no preternatural fulness, nor any other appearance of disease. The pituitary gland was firm, full, and did not, on pressure, ooze out any discoloured or creamy substance.

It is curious, that in this case there were at last epileptic fits, which, however, were not the cause of her death; and as both the epilepsy and mania were only temporary, and had long intervals, it is fair to conclude that the cause also was evanescent, and, in general circumstances, similar in both. From what

has been said, I infer this cause to have been excessive impulse of blood in the vessels of the brain.

Spectres.—The Honourable Colonel R., aged about thirty-eight, always accustomed to intemperance in drinking, terminated a fit of inebriation of a fortnight's duration, with drinking, on the last day, a bottle of rum and a bottle of gin before dinner, and two bottles of Madeira at and after dinner. Of this conduct the speedy consequence was epilepsy, of which he had suffered many violent attacks before he came to Bath.

I found him labouring under considerable depression of spirits, but no mental alienation, no failure of bodily strength, or any other circumstances which confined him to his bed. Certain intimate friends he often saw, and conversed with them with sufficient cheerfulness. He was totally free from fever, in the common acceptation of the word.

The house in which Col. R. lodged was in a high situation, so that the windows of his sitting-room were nearly on a level with the tops of the opposite houses. One morning while I was sitting with him, he suddenly exclaimed, "Look at that woman who is "walking upon those houses among the chimnies." I looked, but saw none, no one in reality being there. I told him that I could not perceive her. "Oh!" said he, "I see her plainly enough, and it makes my head "giddy to look at her. But now she is gone in." The conversation then took another turn; but in a few minutes he again cried out, "There! there is "that woman again; and to make the matter worse,

"she has a child in her arms." Finding all contradiction useless, I seemed to acquiesce in the truth of his representation. He went on, "I have been in "many a battle, and seen men fall wounded or killed "around me, but I declare to Heaven that I never "saw any thing which shocked me half so much as this "sight. If she was determined," continued he, "to place herself in so hazardous a situation, she "ought to have secured herself by ropes." I attempted to sooth him by representing to him that her situation appeared to him much more dangerous than it really was. "You well know," said I, "that "masons and tilers will walk or even run along "parapet walls at a great distance from the ground; "and though looking at them would make you or me "giddy, they are in no peril, because they are "accustomed to what they are doing, and are not in "fear. Be assured that this woman is conscious of "being perfectly safe, and that she will suffer no "injury." He made no answer, but looking for some time stedfastly at the houses, exclaimed, "Thank "God! she is got in at one of the windows again."

I treated this case by the total abstraction of fermented liquors and spirits, by frequent small bloodlettings, by purgatives, and Citrate of Potash. At the end of five or six weeks, Colonel R. was restored to perfect health, having never experienced any return of hallucination similar to that which I have described.

Partial Disease of the Brain in Mania.—Robert W., a collier, aged sixty-four, tall and thin, was on the 24th of February, 1812, admitted into the

Poor-house of Walcot parish, labouring under insanity, which was said to have existed six weeks, and to have been produced by the vexation arising from his wife's having, without his knowledge, spent some guineas which he had saved from the produce of his labour. Before his admittance he had twice attempted to hang himself, and subsequently to that period had tried to stab himself with a fork, and to beat his brains out against the iron rails of the poor-house, but had never offered violence to any other person. He seldom spoke, and when asked a question, would not answer. He was with difficulty prevailed on to take any food, and for the last fortnight the little which he swallowed was forced down his throat. He died apparently starved to death, in April, lying on his back, without any previous failure of the powers of respiration, but from a gradual diminution of the motion of the heart.

His head was opened, at five o'clock the next day, by Mr. G. Norman.

It was small, and the cranium extremely thin. The dura mater adhered to it so strongly as unavoidably to follow the upper part of the cranium when it was taken off, carrying with it, of course, the longitudinal sinus, the blood in which appeared to be fluid. Throughout the whole pia mater, the vessels, apparently small branches of arteries, appeared as if injected with florid blood. The whole brain was somewhat firmer than usual, and the medullary substance of the cerebrum of a more brownish yellow colour than is natural. This colour was much the darkest in the medulla of the right hemisphere, which also differed from that of

the other, in exhibiting in its horizontal sections the greatest number of small bloody points which I ever remember to have seen, while there was no appearance whatever of these points in the sections of the left hemisphere. There was in each lateral ventricle somewhat more than the just quantity of fluid. All other parts of the brain, cerebellum, and medulla oblongata, were in a natural state.

The crista or vertical spine of the os frontis formed a lamina or blade of at least $\frac{4}{10}$ of an inch of projection backwards between the hemispheres.

The whole body was in the greatest state of emaciation that I ever witnessed.

Mania with dissection. Extraordinary state of Cortex.—Mary B., after having been confined for four years at Box, near Bath, was admitted into the Poor-house of Walcot parish, on the 24th of Dec. 1802, being then sixty-four years of age. From that period she remained in a constant of insanity, attempting to fight with every one who came near her, and sometimes putting her hands into the fire and taking out burning coals, apparently without any sense of pain. For these reasons she was constantly in a strait waistcoat, except during her meals; and then she would put into her mouth large pieces of meat, and whole potatoes, which she swallowed almost as fast as a dog would have done.

She was altogether incapable of holding any conversation, answering no question which was asked her, and when she spoke it was generally only to curse and swear, which she did most vehemently. It appeared,

however, that her recollection was not entirely lost, for when she was doing wrong she was sometimes apprehensive of punishment, and an angry word spoken in a certain tone of voice, by the person who had the care of her, always made her desist from any improper action.

There was something of ingenuity, also, in her mode of expressing anger; for on those occasions, though her hands were tied behind her, she would often fall on her face, take a stone in her mouth, spring up, and throw the stone at the person offending her.

Her pulse was seldom above sixty in a minute, and generally full. The pupils of her eyes were always very much contracted.

On the 10th of November, 1812, she appeared in as good health as she had been for several years. The next morning she eat her breakfast well, and being very averse to leaving her cell, which often happened, she was carried out, and had no apparent indisposition. At half past ten, she fell backwards from her seat, and though lifted up, could not support herself in a sinking posture. She had no convulsion or difficulty of breathing, and died at twelve o'clock at noon.

Dissection.—There was no appearance of disease in the thoracic or abdominal viscera.

The head was extremely small, and the cranium of extraordinary thickness. There was no extravasation or excessive fulness of the vessels in any part of the encephalon, which, on the contrary, was uncommonly void of blood. But the whole of the cortical substance exhibited an appearance such as we had never

before witnessed. It was of a yellowish brown colour; and semitransparent, resembling gravy jelly or some specimens of horn; but having little, if any, more of hardness than is common to its healthy state.

Slight Mania cured by Evacuations and Sedatives. —Miss M. W., aged between thirty and forty, who was much subject to headachs, and others of those symptoms which are denominated Nervous, lost that indisposition, became free from headach, and, according to her own feelings, from all bodily disorder; had a good appetite, and was able to walk a great way without the least fatigue. On the other hand, her feet were cold, her sleep disturbed, and her pulse upwards of 100 in a minute. Her attention, also, was absorbed by one or two trifling and absurd trains of thought, which painfully affected her, and caused her often unknowingly to talk to herself. She had positively decided that she had no corporeal malady, and thought it ridiculous to consult a physician. From a notion that her complaints originated in weakness, she had drank wine, and eaten animal food at every meal.

I began to attend her at the latter end of March 1809. My first injunction was that she should wholly abstain from fermented liquors and spirits, eat animal food only once a day, and then very sparingly, clothe her feet and legs warmly, and continue to walk as far as her strength would permit. Leeches were frequently applied to her temples, and she was ordered aperients and frequent effervescing draughts of Citrate of Potash.

Her pulse and other symptoms remaining in the same state, she began on the 9th of April, to take thrice a day, in the state of effervescence, a draught of twenty-four grains of Carbonate of Potash, a scruple of sugar, and six grains of fresh Squill, in an ounce of water, with half an ounce of lemon juice. Under these remedies, in three days she became sick, though without vomiting; weak, languid, and indisposed to walk; and very sensible of cold. Her pulse was reduced to 84, and, in three days more, to 52. At the same time, her head ached every day, her sleep became better, the false impressions were very much abated, and the talking to herself almost removed. —Repetatur haustus bis die.

May 2d. She had continued her medicines regularly, experiencing occasional sickness, with languor and coldness. Pulse from 46 to 60, and sometimes irregular. Her bowels have been open twice daily. To-day's report is, that she has slept well, and has been free from sickness, headach, languor, and mental abstraction. Feet warm. Pulse 52, and somewhat irregular.

May 19. In consequence of some sickness on the 9th, her medicine was directed to be taken only once a day, at bedtime. She has continued to walk, but with a great sense of fatigue in her shoulders and arms, which shake much on exertion. This day's report is, the weather has been intensely hot for ten days. Since the 13th, she has taken no medicine, and is free from all bodily and mental complaint, except occasional slight headach, with some trifling agitation.

Bowels open. Pulse 90, and full. She was directed to continue the same abstinence in diet, to go to bed and rise early; to take a great deal of bodily exercise; and, if she should experience any return of mental depression, to take the draught twice or thrice a day.

On the 11th of June, she had continued her plan of diet; but had very much given up her walks. As at the beginning of my former attendance, she was now free from pain and giddiness of her head; her bowels were open, her appetite good, and she felt strong and in good health. Her face, however, was apt to be flushed, her tongue was rather furred; she had restless nights, and acknowledged that she felt pain from trains of thought which at other times would have been indifferent to her. Pulse 84.

She was ordered to lose from the arm nine ounces of blood, and to take thrice a day an effervescing draught, with seven grains of fresh Squill in each.

June 12. The crassamentum of the blood was of a firm consistence. She had had no headach or sickness, and had passed a better night than usual. Bowels open. Pulse 120, and strong.—Sumat haustum ter die, cum Scillæ recent. gr. viii. in singulis.

June 25. She had increased her Squill to twelve grains three times a day. Her pulse had varied from 112 to 96. On this day she is free from sickness, headach, and all bodily indisposition, except that she begins to feel a little degree of languor. Bowels uniformly open. She has slept better. Pulse 66, and somewhat irregular.—Sumat haustum ter die cum Scillæ recentis gr. xi. tantum.

July 5. On the 28th she was ordered to take 15 grains of fresh Squill, ter die. Having, however, been occasionally in a slight degree sick, she has omitted her medicines since yesterday morning. No headach. Tongue cleaner than it was. She complains of a good deal of debility, has had a return of the pain in her arms for the two last evenings, and has been disposed to shed tears. Her mental depression continues to be much less. Pulse 54, and irregular.—Pergat.

July 8. She has been sick only once, which was yesterday for about ten minutes; has slept well, and waked calmly. Bowels very open. She is free from headach; but feels a great weakness and lassitude, with occasional aching of her arms. Pulse irregular, and very easily agitated.—Pergat. Mitt^{r} sanguis è brachio ad ℥vii.

July 10. The blood was in every respect of the natural appearance. She has been entirely free from sickness and pain, has slept well, and is in good spirits; but still continues languid. Pulse 68, and regular. Bowels open. Tongue always with some yellowish fur.—Sum^{r}. haustum ter die, cum Scillæ recentis gr. xvii.

July 17. She has been sick at various times, so as almost to vomit, for which reason she has taken only half a draught at once; and has now neither sickness nor headach. Bowels moderately open. Her lassitude is increased, and last night, after walking, she had great trembling in her legs, with vertigo. Tongue, for the first time clean. Pulse 60, soft and regular. Her catamenia have been wanting the two

last periods.—Pergat sumere haustus ut ultimò præscriptos.

July 21. She has been occasionally sick. Bowels open. Has slept and waked well; but is fatigued with walking, and continues to have aching pain in her arms. Pulse 60, and regular.

She was directed to continue the draughts, and use before breakfast a shower-bath, consisting of one gallon of boiling water, and three of cold.

July 25. Tongue clean. Pulse 60. Other circumstances as before.

Sum^{t}. haustum bis die, cum Scillæ recentis gr. xix.

Utatur balneo ut antea, alternis auroris.

July 29. She has no sickness, and is free from every species of indisposition. Tongue clean; bowels open. Pulse 52.

I now relinquished my attendance, desiring her to take her draught for a few nights at bedtime only, and to continue for some time her shower-bath, consisting of one gallon of boiling water mixed with four gallons of cold.

This lady has continued to the present time, Sept. 1811, to enjoy uninterrupted health.

Mania.—John B., aged between fifty and sixty, has been for several years confined in the Poor-house of the parish of Walcot, and during that whole time has never once exhibited any interval from the following state of mental alienation. He is continually talking of his property, walks about in a proud manner, and when asked what is the matter, accuses every one who addresses him, of knowing perfectly well that

all the land and dwellings within sight belong to him, and of being accessory to his confinement for the sole purpose of robbing him. On this subject he would sometimes storm and rave, but soon become more cool. His pulse was generally about 70 in a minute. He never complained of illness, walked about and took food well. The pupils were always very much contracted.

About five months ago he began to have abscesses in various parts of the legs, thighs, and nates, accompanied with fever, which considerably reduced him. He got better; but three months ago he had fever, unaccompanied with any other morbid symptoms, during which there was some abatement of his maniacal state. For about a month he kept his bed and refused food, which he threw out of the window. He died yesterday at ten A. M. greatly reduced, and was opened this morning July 16, at seven A. M. in my presence, by Mr. G. Norman.

The small arteries of the pia mater were a good deal injected with florid blood. The larger veins of the same membrane had in them some bubbles of air, but on minute examination these were not to be found any where but in those vessels which had been wounded, though at some distance from the spot where the bubbles were found. The medullary substance of the brain was firm, and, when cut, full of points of dark blood. The cineritious substance was very thin in proportion to the medulla. Two drachms of clear colourless fluid were found in the right lateral ventricle, and nearly the same quantity in the left. A preter-

natural quantity of the same fluid was found between the dura and pia mater, and between the former and the cranium. The thalami nervorum opticorum were flatter than common. The corpora striata were full and round. The corpora bigemina, and all other parts, were very distinct. The infundibulum was large and firm; the pituitary gland likewise firm, but small. The optic nerves were also small. All other parts were in a natural state.

It was not permitted us to examine the thorax and abdomen.

Intercommunity of Nervous, Epileptic, and Paralytic Symptoms with Hydrocephalus.—Miss E. R., aged six, was always extremely nervous, so that when reproved she was affected with violent tremors. About three months ago she had an epileptic fit, in which one side was chiefly convulsed, and she foamed at the mouth, and was perfectly insensible. Ever since she has been at times affected with headach and occasional dulness. Six weeks ago she had a second fit; and three weeks ago another, with vomiting; and from that time has laboured under inappetency, occasional sickness, dulness, itching of the nose, grinding of her teeth, and imperfect sleep.

I first saw her on the 8th. Her pulse was slow, her pupils dilated, with blindness, indistinct perception through her other senses, and occasional convulsions. On the 10th, twenty grains of submuriate of Quicksilver, with compound powder of Scammony, given within thirty-six hours, had not opened her bowels. For two days she had not spoken; had suffered many

fits of convulsion, had a pulse of 162 in a minute, and died during the night.

Epilepsy only a greater degree of Hysteria.—Mrs. W., aged 22, married nine weeks, missed menstruation at the last period. On Friday se'nnight at night, without previous indisposition or apparent cause, had some coldness and trembling, and her rest was disturbed with startings and dreams, but has had no headach, delirium or fever, or giddiness. This continued and increased for two or three days; when there were symptoms of hysteria, choking of throat, and other convulsions all over, sometimes like chorea; in the convulsions three or four persons could not hold her. These have returned almost constantly night and day, affecting the face as well as other parts, destroying sleep, but in no respect disturbing the mind or affecting the head. Last night, Nov. 20, at twelve, was seized with an epileptic fit, violently convulsed, foaming at the mouth, and becoming soon senseless; ever since which she has been for the most part in a comatose state, stertorous, and occasionally convulsed. Pupils contracted to a point. Eyelids half open, and when raised falling down to the same state. The left side has been most convulsed. Two motions yesterday. Respiration 24. Pulse 150, and very weak, after about ten ounces of blood had been just taken from the temporal artery and jugular on the right side. Carotids very strong. Within half an hour afterwards had two slight convulsions; came to herself, and was able to swallow a little. Al. ʒj in Enem. statim. Cold water with Sol. Amm. to head. Haust. sal. c̄ Scil. gr. vi. tertiis.

Gradation of Hysteria, Epilepsy, and Hemiplegia.—Miss B., aged 30, rather short, and now pale, enjoying tolerable health, except occasional headachs, in June 1805, in very hot weather, became affected for two days with lowness of spirits, succeeded by crying, and globus hystericus, which increased with convulsions till she foamed at the mouth, and became nearly insensible. This attack was accompanied with great vomiting, and ended, after two hours, in hemiplegia of the right side and loss of speech. She soon recovered the use of her speech, and gradually that of her limbs; but in the hot weather, in May 1808, had a new attack of hemiplegia on the left side, and again lost her speech, which she has now in no degree recovered, though her limbs are tolerably restored to strength. Her intellects are also perfect. She is subject to occasional attacks of headach, and has now a pain in the back of her head and left eye. Pulse in her wrist natural; in both carotids, especially the right, very hard, full, and bounding, exactly as though a cylinder of metal, of half an inch in diameter, were strongly vibrating against the finger.

St. Vitus's Dance and Paraplegia, symptomatic of Epilepsy.—Mr. T., aged about sixty, subject to occasional fits of gout, after two attacks of epilepsy, had been some months subject to slowness of speech, vertigo, and such a weakness and incapacity of directing the lower limbs, as usually attends St. Vitus's Dance, or paralysis of the lower extremities, but without any numbness of those parts. Subsequently to the use of an issue in the neck, and other means,

the giddiness left him; but the hesitation of speech and ideas increased, when, after a bad cold, without any return of vertigo, or pain of his head, or any symptoms of aggravated disease of the brain, except weakness of his legs and memory, he was suddenly seized with epilepsy, which after four or five repeated paroxysms, without any interval of returning sense, in two days proved fatal.

Globus Hystericus, Epilepsy, and Mania, different Gradations of the same Affection.—In Master J., aged four years and a half, who had had several attacks of epilepsy, globus hystericus generally occurs two or three days before the fit; and the fit itself is followed by mania for twenty-four hours, on the recession of which, globus hystericus again appears, and then comes perfect recovery.

[June 22, 1808.]

Remarks on the increased Excitement of the Brain, producing Epilepsy, Mania, &c.—The principle of excitability itself is doubtless capable of being varied as to quantity, and capacity of adherence. Perhaps, though this deserves seriously and deeply to be inquired into, the blood and certain other causes may increase the excitability, by furnishing more of the principle? Nux vomica?

The impulse of the blood seems the common exciting cause of the diseases severally referrible to this state.

That impulse may not, however, be any thing more than a remote cause, the *proximate being a certain*

state of the brain itself. The proximate may, therefore, possibly be producible by other causes.

This being allowed, it will be still probable, that as the impulse of the blood is *one* evident and indisputable cause, and probably the greatest cause, of excitement, the best practicable remedy will be the abstraction of this cause of excitement, even below the degree, which, in a healthier state of brain, would be natural. By such measure, the stimulus will be reduced to the level of the part to be acted on. [1804.]

Proof that Epilepsy is Determination of Blood to Head, and that the Convulsions relieve it.—Miss F., who has from twenty to thirty fits annually, for two or three days before a fit constantly finds a constitutional enlargement of the thyroid gland increase to a very great degree; in a day or two after the fit it returns always to its natural state, the accumulation of excitement in her at the same time subsiding.

Various Remarks on Epilepsy, &c.—In Epilepsy and Hysteria there is a great impulse to make water. In the former also vomiting frequently, as also in apoplexy. But he who would therefore conclude that either disease depends on disorder of stomach, might as well infer that Epilepsy or Hysteria come from disease of the bladder or kidney.

In regard to *Epilepsy*, it will be well to inquire into the effects of impulse on the medulla oblongata, by the basilar artery. [1814.]

The beginning and end of each *epileptic fit*, before total insensibility begins, and after it ceases, is often

delirium, screaming, false impressions, attempts to annoy others under these impressions, &c.

When Miss F. has what she calls an *attack*, which is short of an epileptic fit, the first symptom is a confusion in her head, which is always followed by an hysterical rising in her throat, and accompanied with incapacity of speaking and recollection.

Her pulse is seldom under 96 in a minute, and increases in frequency towards night, and always becomes quicker and quicker till the fit comes on, when, for two days, it is at the slowest, and other symptoms of disease the least. She has a great deal of the rumbling in the bowels, which is usually, though unjustly, attributed to wind.

Closing the lips and blowing out, as if in smoking, during sleep, accompanies certain states of *epileptic stupor;* and if occurring in a state of health, during sleep, is certainly an indication of a tendency to cerebral oppression.

In Miss E., labouring under *Epilepsy*, a great degree of insensibility occurred in the hands and feet. After this had continued for several days, it was removed by two copious bleedings from the arm.

Some weeks afterwards it returned chiefly in the hands, and then was relieved, though not wholly removed, by three epileptic fits occurring in one night.

In Mr. L., *epileptic fits* are always preceded by a sense of glimmering like a star, as he calls it, on the right side of his head, followed by convulsions and senselessness, and lastly by urging to vomit. He has no stomach complaint, and his bowels are open. Globus

hystericus, and convulsions of the face, and wringing of hands, are his other symptoms.

In Mr. S., troubled with *epileptic fits*, a rushing noise in the ear with deafness, is regularly increased at one P. M. and diminished at five or six. [1812.]

In Mr. P., at an advanced period of life, long affected with gout, during *Epilepsy*, the blisters on the legs were pale: so was the gout in the lower extremities for several years, while that in the upper extremities was red and inflamed.

A Modification of Nervous Affection.—Stammering.—In Miss F., as the cause of fits gradually accumulated during each interval, blood collected in the head, or continued to exhaust by stimulation, till convulsions produced a determination to the surface and extremities; stammering also began to occur with other symptoms, till relieved by a fit.

Mr. A., aged seventy-four, had a violent *epileptic fit*, in which the left side was more convulsed than the other. In the sopor which followed, the pulse was 120, the respiration 20: it was performed chiefly by the thoracic muscles, and it is worthy of remark, that though the patient seemed altogether senseless, yet the respiration was assisted by raising the scapula on the right side. Was not this an evidence of probable recovery? The recovery did in fact take place. [1812.]

In Miss A. G., a few hours before her death, immediately after the convulsions attending *a fit of epilepsy* had ceased, there was, for two or more minutes, no perceptible pulse in the radial arteries,

while that in the carotids was full, strong, and bounding. After the time specified, the pulse in the radials returned.

In Mrs. J., some weeks after *epilepsy*, before the mind had recovered its powers, there was a frequent pain in the head, and a great disposition to sickness, which occurred chiefly on getting up or lying down in bed, or turning from side to side. [1812.]

Inefficacy of Opium to relieve Epilepsy.—Mrs. J., Mr. M., were both kept in a state of stupefaction by it, yet the fits returned in the midst of the sopor.

If it be true that the convulsions, and probably the *sickness and vomiting*, are an effort of nature to relieve the previously diseased state of the brain, probably to carry on the blood stagnating there, why not try Dr. Marriott's vomits? I have seen two cases of hysteria cured by emetics. But then in epilespy, a bursting of the vessels in the brain, and fatal hæmorrhage, or perhaps serous effusion, and therefore hydrocephalus, might take place? It is certain that vomiting attends that state of brain which is usually followed by hydrocephalus. Would emetics be good in the incipient state of hydrocephalus?

Effects of Stimuli.—In Miss F., a little eating and wine immediately takes off convulsions of the face, speechlessness, and very often pain of the head. Mr. C. says that it also makes the pulse slower. Great relief was in every respect obtained from Oleum Succini rectificatum, of which she took by degrees 114 drops twice a day in milk, two ounces.

How does this act? Surely by extending the

determination, which did exist in the head, to the whole habit, and thus diminishing the former. It remains for me to prove that the stimulus may be partial; which I do by the circumstance of the head being unduly hot, while the feet are unduly cold. On leaving off Oleum Succini, though it was rather gradually decreased, the fits and attacks were amazingly increased, and the indisposition during the intervals much aggravated. By degrees, under the use of Ether, health became as usual.

Effects of Motion.—Capt. H., aged about 35, long subject to epilepsy, often keeps it off by walking very violently to and fro, at a time when slight convulsion begins, and when, at the same time, though his senses remain, he cannot speak, the words being wanting, though capable of being pronounced, when suggested by another person. [1816.]

Purgatives not effectual in patients, under epileptic or paralytic or other seizures. Dec. 23, 1807.

On Sedatives in Epilepsy.—Syrup of Squills, in Miss L., aged 20, affected with *Epilepsy*, reduced the pulse to 54 or 56 in a minute, and rather irregular. She took from six to seven drachms daily, without nausea, but with some purging, and an abatement of appetite, which before was very great. At the same time her diet was regulated as to quantity and quality; the proportion of animal food was lessened, and all strong liquors abstracted. She used to have a fit once in three or four weeks, and under the use of this remedy, she was at first seven weeks without a fit. The medicine excited, in the progress, neither nausea nor

purging. I could not prevail on her to take sufficient habitual exercise. The menses had been suppressed, but their return for some weeks afterwards did not prevent a return of fits.

Dr. Fothergill was long ago of opinion, that nervous medicines, as Asafœtida, &c., acted in curing epilepsy, chiefly by diminishing the appetite. Dr. Gregory, I have been told, goes one step further, and explains the operation, by supposing that they render the stomach insensible to the stimulus of food. I am not certain whether this is his theory, or whether he supposes they diminish the capacity of chylification and absorption in the whole alimentary canal, and so their stimulus on the constitution through the blood-vessels. Were this latter the case, they should make persons thinner.

Vegetable Diet.—The inference of Dr. L., that because vegetable diet has often cured epilepsy, &c. therefore it will preserve health in those who are well, is as irregular, as to infer that, because bending will straiten a crooked stick, therefore it will preserve the shape of a straight one.

Modification of Determination to the Head.—Charlotte A., aged sixteen, who had menstruated regularly, and, under nervous complaints, experienced great indulgence from her parents and other friends, was seized with a stoppage in the bowels, accompanied with vomiting, from which she was soon relieved; but after a week she was seized with some soreness of

throat, attended with violent headach, and occasional fits of convulsions, lasting often for several hours, with insensibility. This was about thirteen weeks ago; and from that period she kept her bed till about six weeks ago, when I insisted on her being regularly taken out of bed, in consequence of which she is now able to walk with considerable strength. About eight weeks ago the fit was always attended towards its conclusion with hiccup; and three different times, immediately after the hiccup, she has for some weeks not spoken. This is the case with her at present; though she puts out her tongue and swallows well, perfectly understands what is said to her, and has by signs corrected the date of a certain part of her malady described by a person who has accompanied her to my house. Pulse natural. Bowels open. No headach or giddiness. Appetite good. Tongue clean. Sleeps well.

Some time afterwards I saw this patient, when she had recovered her speech; and she was restored to perfect health, by making her walk, and keeping her on low diet. [March 1813.]

Disoxygenation of Blood from Epilepsy.—In most cases of Epilepsy, there is during the convulsions a suspension of respiration, which is, I think, partly owing to the constriction of the glottis, either by the strong contraction of the arytenoid muscles, or the forcible elevation of the whole larynx against the epiglottis, and partly to the vehement action of the abdominal muscles, which depress the ribs. Hence the action

of the heart continuing, the blood which passes through the lungs is not oxygenated, and becomes black, and at the same time, in consequence of the state of expiration, is accumulated in the venous roots of the vena cava superior. This is the reason why, under such circumstances, persons, according to the common phrase, become black in the face.

I saw this state strongly illustrated in the case of the late Mr. H., of Lambridge, who had several epileptic fits, during each of which respiration being for a considerable time suspended, while the action of the heart was strong, the face became of the darkest possible shade of purple, which disappeared as the respiration recommenced from the cessation of the muscular contraction.

Deoxygenated Blood from Affection of the Brain. —In the following example, which occurred in the month of August 1812, I had an opportunity of observing the actual appearance of arterial blood, when out of the body.

Mr. S., aged sixty-seven, who in the former part of the same year had suffered some kind of fit, apparently more of the *epileptic* than *apoplectic* kind, in which the left side was for some time incapable of ready motion, and the arm was rather rigidly contracted towards the breast, after some weeks strenuously employed in bleeding, purging, cooling and sedative medicines, and the lowest diet, was restored to perfect health in every respect. I left him under strict cautions as to diet, which were more especially necessary, as he was

unable to take much bodily exercise on account of an habitual lameness in one of his hips. These cautions he for a short time observed, and then gradually neglected.

On the morning of the 2d of August, he was suddenly seized with an *epileptic fit*, in which he was strongly convulsed, in his face and other parts, chiefly on the left side, and entirely lost his recollection. Two hours afterwards he was visited by Mr. Goldstone, who found him insensible, convulsed, and with irregular stertorous respiration. His pulse being very strong and full, and that in the carotids extremely bounding, Mr. G. took away three or four and twenty ounces of blood from the temporal artery. The convulsions immediately ceased. The first eighteen ounces of blood had the colour of dark venous blood. That which flowed subsequently was of a brighter colour. Half an hour after, I saw the patient. He was not wholly insensible ; but free from convulsions, though his left hand and arm were in a state of rigid flexion upon his breast. His pulse was 84, very full and strong ; his respiration only 16, though free from stertor. His countenance was pale. The blood had the appearance already described.

He was strongly purged. The next day he was violently delirious, and his arm continued rigidly contracted as before. His respiration bore the due proportion to the pulse. The cathartics were continued, and he was again largely blooded from the temporal artery.

On the following day the contraction of his arm

was gone; and no paralytic affection had affected any of his muscles. He was perfectly in his senses, and had no complaint, but headach and debility.

Epileptic Fit cured by Cold Affusion.—In the year 1787, I saw an Ideot lying insensible in the street, in a *fit of epilepsy*, in which he had convulsive contractions of the recti abdominis muscles, and his hands and head were sometimes convulsed, and at other times rigidly contracted. Several persons, who had frequently seen him in a similar state, called out that he would soon recover if cold water were thrown in his face. A young girl had already brought a large bason of water, which she dashed very plentifully on his face, head, and neck. In a minute or two all the spasms were relaxed, and were followed by a sudden state of quiescence, from which in about the same space of time he recovered, sat up, and loudly complained that somebody had been making water on him.

Epilepsy cured chiefly by Exercise.—Miss S., a tall thin girl, aged 16, began to menstruate about the usual period; but leading a very sedentary life, became languid, subject to costiveness and headach, occasional pain about the lower ribs on the left side, and to a gradual diminution of the menstrual discharge, which became irregular, and at last ceased seven weeks before the period of my visit. About a week before this time, some dark-coloured spots appeared under one of her feet, accompanied with fever, and great pain and swelling in the part affected and round the

ankle. Her foot was bathed in warm water, poulticed and leeched; and a few days after the last of those operations, became better. From that time her head grew much worse, and the pain in her side was considerably aggravated.

On the 27th of March, 1809, she was seized with a violent pain across the forehead, accompanied with a flushing and burning heat of her face, followed within five minutes by an eruption of small pimples on the part, choaking in her throat, and strong general convulsions, in which three or four persons could scarcely hold her; she ground her teeth, and was totally insensible. These symptoms lasted for about an hour, and were not accompanied with foaming at the mouth, or followed by stupor. On the 28th, she had two attacks of the same kind; two on the 29th; and about 12 o'clock on the 30th, the day of my visit, one.

March 30. Her nose bled a few drops a day or two ago. For these three nights she has slept little, chiefly from the pain in her side, on which she cannot so well lie as on her left. She has a short cough, unaccompanied with expectoration, and complains of aching pains in her shoulders, legs, and various other parts. Her skin is all over hot, her tongue somewhat dry, her urine rather high coloured; and for several weeks her fever has been attended with night sweats. She has no appetite, is usually costive, and for two days past has had no evacuation from her bowels. Pulse 120, hard and full: that of the carotids very strong.—Mitt' sanguis è brachio ad ℥viij.

℞ Potassæ Carbonatis ʒijss.
——— Tartratis ʒiij.
Sacchari purissimi ʒj. Solve in
Aquæ distillatæ f ʒvj. et cola. Sumat cochlearia duo ampla cum Succi Limonis cochleari amplo uno inter effervescentiam 4ta quâque horâ quotidie, donec alvus bis terve dejecerit.

April 1. Before bleeding yesterday, she began to feel the fulness in her head, which was immediately removed by the operation, from which she seemed lighter and better, and experienced a total removal of the pain in her side. Pain, however, came on in her back and lower limbs, and two hours afterwards a fit followed, which has been to-day twice repeated. One very dark and costive stool. Having found her yesterday in bed, I absolutely interdicted that habit, in consequence of which she is now below stairs, sitting near the fire. Pulse 120. She was desired to continue the mixture, to take a pill of Calomel at night, and a dose of Senna the next morning; and to abstain from fermented liquors.

April 3. She had four motions yesterday, from the nature and quantity of which it appeared that her bowels were much loaded. One to-day, dark and offensive. Yesterday she had one fit at three P. M. and another at five; but has had none as yet to-day. Her head, which was yesterday very much affected with pain, is to-day better; and though she has had no return of pain in her side, she continues to have a frequent dry cough, and disturbed nights. Pulse 132, while sitting by the fire.—Repetantur pilula è

Calomelane, et haustus aperiens.—Pergat postea in usu Misturæ è Potassâ.

℞ Pulveris Jacobi gr. iij.

Extracti Aloës spicatæ gr. v. Ft. Pilulæ duæ æquales. Sumat unam cras et perendie horâ somni.

April 6th, two P. M. On the fourth, during the day and night, she had seven motions, two yesterday, and one rather loose to-day. After my visit on the 3d, she had a fit, and afterwards suffered much in her head, and had a restless night. On the 4th, she had six fits immediately following each other; and two yesterday, at two o'clock and at five. After the second fit she was blooded by my order ad ℥iv, had a good night, and to-day has had no fit, though a good deal of headach. The blood in the first cup has a considerable crust of firm coagulated lymph, not concave, but mixed with superficial patches of florid red globules. That in the second cup with a firmer crust of a florid red colour. The crassamentum in both difficultly diffusible by trituré in the serum, which is of a natural colour. Skin cool. Tongue moist and tolerably clean. Urine at ten last night of a natural amber colour, with a slight mucilaginous cloud. For two days past she has had a few inflamed boils on her shoulders and legs. Pulse 112, and soft. She omitted her pill last night.—Repetatur Mistura è Potassa, addendo loco Potassæ Tartratis, Scillæ recentis gr. xxiv.

April 8, five P. M. About five o'clock on the sixth, she had a fit, one yesterday, and two to-day.

One motion to-day and yesterday. Each fit has been preceded by headach, which has become better when the fit has receded. During the fit on the 6th, she had violent globus hystericus, which has also once or twice lately occurred when the headach was most violent, though there was no fit. Her cough is troublesome, with some expectoration, and her tongue slightly white; she is free from sickness in her stomach, has slept well for these two last nights, eat some fowl yesterday with an appetite, and was otherwise better than she has before been. Pulse 120, and rather bounding.—Cras mittatur Sanguis ē Brachio ad ℥vi. Pergat in usu Misturæ cum Scillæ recentis ʒss.

Let her begin to go out into the open air, when the weather will permit.

April 12. 4½ P. M. In bed. She had one fit after my visit on the 8th, none on the 9th, three on the 10th, and none yesterday or to-day. The bleeding produced some degree of faintness. The first cup of blood has a thick crust of coagulated lymph, tough, but not cupped. The second is without that crust, but firm. The crassamentum in both not wholly diffusible, and the serum small in proportion, and of the natural colour. Her head was very bad on the 10th, but for these two days has been better. Bowels regularly open. Tongue slightly furred. Nights good. Cough better. Urine of last night high-coloured, and with a copious mucous sediment. Skin rather hot. Pulse 124, and very hard. For two days she has been out in a wheel chair, and seemed much refreshed by it. No sickness.—Pergat in usu Misturæ

April 17. Since my last visit she has had no fit, but one, which was last night, and that slight. She has had occasional headach, always accompanied with globus hystericus. She has no cough or pain in side, her skin is cool, her nights have been good, and she has no sickness. Bowels open, except one day, when she took her aloetic pills with due effect. Tongue slightly furred. Pulse 116, (by the fire,) and soft. She has been out every day but one, and at my urgent desire has begun to walk. She acknowledges herself to have been sensibly benefited by these exertions.—Pergat in usu Misturæ ad formam novissimam.

April 24. She had a fit each day on the 17th, 18th, and 19th, two each day since, and to-day one, out of which she is just recovering. In the fit she cries out violently, rolls her eyes very much, and afterwards is stupid, but free from coma. All the fits end in globus hystericus, and spasmodic eructations. Urine high coloured. Bowels open. Sleep and appetite good. On account of the badness of the weather she has scarcely been out since the last report till to-day. Pulse 132. Let her wholly abstain from animal food, and go out in spite of the weather, well clothed, and walk as much as her strength will permit. —Mitt^{r} Sanguis è Brachio ad ʒix.

℞ Pulv. Folior. Digitalis gr. xii.

Confect. q. s. Ft. Pilulæ xii æquales. Sum^{t} j ter die.

April 26. 4½ P. M. She was faint after losing the blood, which was covered with a thick inflam-

matory crust, and the serum large in proportion. Had one severe fit yesterday after the bleeding, but to-day has been hitherto free. She was out a good deal yesterday. Bowels open. No sickness or vertigo. Her head, which I have had shaved, is well. Face cool. Sleep good. Tongue more clean. Pulse 96, and soft.—Pergat sumere Pilulas è Digitali.

April 30. She had three fits on the 26th, none on the 27th, two on the 28th, none on the 29th, and one to-day. On the 28th she was sick, and vomited, and has been affected to-day in the same way, with eight or nine motions. Yesterday she was faint, and complains to-day of great pain all over her.—Omittantur Pilulæ.—Let her continue her regimen and exercise.

May 4. Had a fit on the 1st, 2d, and to-day, all slight but the last, which has been followed by a bad headach. She has gone out constantly, and walks much better than she did, but is thinner. She is free from cough. Costive for three days. Skin cool. Pulse 120, and weak. Let her walk out constantly, keep her bowels open, and often wash her head with cold water.

These directions were followed, and in a very short time she regained perfect health.

Epilepsy and Gout cured by Bleeding and low Diet.—Major M., aged 52, who had served with the army in America, and had been a very free liver, after several years of comparative indolence, during which he became fat, began to have the gout, with which he was for eight years very constantly affected. During this

period he made no change as to his mode of life, till at the expiration of the term above mentioned, he was seized with an epileptic fit, attributable, in his opinion, to hot sea-bathing. For the two years immediately following this attack, he lived more temperately, notwithstanding which he was scarcely ever free from pain and weight in his head, and gout of a very inflammatory kind.

At this time, on the first day of April 1809, when I first visited him, though labouring under the gout, he had been seized with *Epilepsy*, which occurred three times in the course of the day. In each attack he was convulsed and perfectly senseless, foamed at the mouth, and had cold extremities. After the fits he had little stupor, and soon became warm. His pulse was quick, full, and strong. In the course of seven days, twenty-six ounces of blood were taken at twice from the temporal artery, as much at two bleedings from the arm, and leeches were twice applied to the temples. The bowels were kept in an open state, and draughts of Potash with Squills were given with Lemon-juice in the state of effervescence.

By these means the gout was removed, the pulse came down to its natural state both as to frequency and force, and his head was greatly relieved, though some defect of recollection continued.

On the 8th of April, in the morning, his head became worse, and notwithstanding the free use of purgatives and refrigerants, at four o'clock in the morning of the 9th, he was attacked with hemiplegia of the right side, impairing, in some degree, his

power of speaking, but unattended with dyspnœa or stertor. Not long afterwards, he began to be affected with globus hystericus. Fourteen ounces of blood were taken from the left temporal artery.

On the 22d, the medicines ordered were as follow:

℞ Extr. Col. Comp. ℈j.
Pulv. Scamm. Comp. ℈ij.
Syr. Croci. q. s. Ft. Pilulæ xv. Sumat tres cras primo mane.

℞ Kali Limoniati ʒss.
Lact. Amygd. ʒvj.
Sacch. Purif. ℈j.
Tinct. Digit. gtt. xv. ft. h. mer. et h. s. s.

His head was in some degree relieved; but it was ordered that a perpetual blister should be kept on the crown of the head, and the purgative and refrigerant medicines with Squill continued. All combinations of ardent spirits, together with animal food, were wholly interdicted.

By the 25th of April he was so well as to be able to go out. Several months afterwards Major M. had suffered no return of *Epilepsy*, had scarcely felt the gout, and had wholly recovered from the paralysis.

He had persevered in the plan recommended; and had occasionally lost blood, on any return of considerable uneasiness in the head. His health was in a much better state than it had been for ten years before the use of the means described.

Epilepsy cured by Bleeding and low Diet.—About twenty years ago I was sent for, late one winter's

night, to visit the Earl of N., then residing between twenty and thirty miles from Bath. This nobleman had been a gross feeder, but not an intemperate drinker; and had been subject to *epileptic fits*, one of which had not long before attacked him on an occasion of great public interest. I found him insensible and stertorous, after having suffered repeated paroxysms of this disorder. His face was extremely flushed, and his pulse was strong, full, and labouring. His bowels had been without relief duly opened.

On consulting with a very intelligent Surgeon who was attending him, I could not avoid suggesting the propriety of immediate blood-letting; but was informed by that gentleman that he had urged the necessity of this remedy, in which however he had been unsuccessful, in consequence of the unqualified decision of certain medical men of high authority, that it ought never to be administered in a constitution like that of Lord N., which was more or less disposed to gout. As this opinion agreed with mine in point neither of reason nor of fact, I thought it my duty to make the proposition, which was received as the Surgeon had led me to expect. About this time it happened that Lord N. occasionally coughed with considerable force, and the mucus, which either flowed or was wiped from his mouth, was suffused with blood. Of this circumstance I availed myself to renew my importunity; and the family, happily terrified with the apprehension of a large and fatal hæmorrhage from the lungs, permitted the remedy which I had proposed. Fourteen or sixteen ounces of blood were

immediately taken from the arm; in consequence of which the insensibility, which had continued many hours, very quickly ceased. The bleeding was more than once repeated. Purgative and saline medicines were given. A low diet, with much bodily exercise, was recommended. Lord N. soon recovered his health, and is now living, without having ever experienced any return of his malady.

Epilepsy from Palpitation of the Heart.—Mrs. C., aged between 40 and 50, who had been for many years subject to coughs with violent spitting of blood, and copious expectoration, attended with a quick and full pulse, all of which were often relieved but never wholly cured, was also often attacked with fits of palpitation of the heart. In the month of October 1809, her cough being better than usual, she had for many days more or less of the palpitation, accompanied with a sense of fulness and throbbing pain in her head. One day, while she was in an upholsterer's shop looking at new mahogany furniture, the smell of the oil, which was very disagreeable to her, produced a great increase of palpitation, which was soon followed by convulsions, foaming at the mouth, and all the other symptoms of epilepsy. She was soon relieved by blood-letting, Citrate of Potash in the state of effervescence with Squill, and purgatives.

The palpitation, however, occasionally recurred, though in a slighter degree, for many days afterwards; and she continued liable to headach, which she herself constantly remarked to be accompanied with throbbings in the head, synchronous to the systole of the heart

in the palpitation, whether the palpitation arose from surprise, painful thoughts, disagreeable smells, or any other cause.

On the 15th of November following, she experienced for two days a threatening of the epileptic symptoms. A violent degree of palpitation of the heart produced a throbbing pain and confusion in the head, accompanied with loss of memory. The uneasy feelings were, however, almost wholly confined to the left side; and it is worthy of note, that in the left carotid there was a preternatural degree of fulness and strength, while the pulsation of the right was comparatively soft and small.

The symptoms were relieved in the manner before related; and to this day, June 1813, the patient has suffered no relapse of the disease.

Epilepsy, effect of sanguineous Congestion, and cured or suspended by Vertigo.—Miss W., aged between 40 and 50, had been for 25 years subject to epileptic fits, in which her features were distorted, and her head drawn to the right side. She foamed at the mouth, was perfectly senseless, and had subsequent stupor. These fits, for seventeen or eighteen years, came regularly once a month about the period of menstruation; but about seven years before the time of this report, she was seized with vertigo, which lasted for a fortnight, during which her power of attention and memory was extremely defective. Immediately her fits ceased, and did not return for eight months, and then at irregular periods, with the occasional intermission of several months. Of late,

however, they had been very frequent, recurring sometimes three or four times in a day. On the day of my visit, Sept. 9, 1810, for the first time in her life she had five; in the last of which a new circumstance occurred, which was convulsive affections of her arms and body.

It was pointed out to me by her sister as a curious fact, that from the very commencement of these fits to the time when she related the fact, when menstruation had for three or four periods been wanting, the veins in the hands and neck have been observed to be unusually full, and ceased to be so as soon as the fit was past.

Case.—Nearly two years before I was first called to attend Col. L., he had suffered what in India is well understood under the name of Hill-fever; subsequently to which period he had been affected with incessant and violent headachs, which a voyage to Europe, and the care of the best practitioners in London, in no degree relieved. On the contrary, they uniformly increased, accompanied with emaciation, prostration of strength, and a very quick and weak pulse. In this state I first saw him at Bath, when he could support himself out of bed only for an hour or two, sat with his head continually supported by his hand, found all noise or exertion intolerable to him, and could with difficulty speak a few words, in a tone of voice scarcely audible. On examining the head, I found it all over sore, without any appearance of external inflammation, eruption, or swelling, but full of what seemed to be soft places in the otherwise firm scalp, yielding without

much resistance to the impression of the finger, as if consisting only of a soft pulp. These spots were of different sizes, but, as far as I recollect, for the most part about that of a sixpence. To what depth they reached, and whether they extended into the membranous covering of the cranium, or even into the bone itself, I could not ascertain. Some remedies were ineffectually tried, and after a very few days Col. L. was seized with epileptic fits, which returned at various times for several successive days, during the greater part of which he was wholly or nearly insensible. I had before projected a measure which was suspended during this state from an apprehension that every moment would be the last of the patient's existence. When, however, after several days, Col. L. awaked from this insensibility to a renewal of his sufferings, I proposed to him that two incisions should be freely made on the crown of the head, through the scalp, to the cranium, and that one or both of these should be converted into large and permanent issues. To this proposition he readily assented. The incisions were made, and produced a moderate hæmorrhage. The upper incision was made along the fore part of the sagittal suture, the lower just above the middle of the squamous suture. The effect was most salutary. In less than half an hour the pain ceased, and has never since returned. The issues were kept discharging, and Col. L. gradually gained sleep, strength, and flesh. Not more, however, than two or three weeks elapsed, while he was still unable to admit of any long continuance out of bed, when he was seized with

cough, accompanied with increased fever, and pain in the right side; which was soon followed by an expectoration of dark-coloured matter, so fetid as to make the whole room scarcely tolerable. I considered this as the matter of some abscess, either in the thorax or liver, though no symptoms had before existed to shew disease in either of those parts. In a few days the expectoration and cough were entirely gone, and Col. L. continued to improve in health, with no other indisposition than an occasional epileptic fit, and more soreness with the topical *pappiness* in the head. I could not help suspecting those symptoms to have some connection with a remote syphilitic affection; and therefore, though there was no clear foundation for this conclusion, and Mr. H. had judged otherwise, I thought it prudent to employ some mercurial alterative. For this purpose I chose Ward's White Drop, which I believe is a nitrate of quicksilver; and this I continued for several weeks, so as to produce very slight soreness of the gums. The head got well, and even the epilepsy remained absent for several months; till at last Col. L., tired of the issue, dried it up; then the epilepsy returned, and was again relieved by a renewal of the operation. At this period Col. L. went out again to India.

Modification of Disease of the Head.—A young lady, Miss C. F., who had been for some time ill with various maladies, was found early one morning in a state of total insensibility, with dilated pupils. This state continued for thirty hours, and seemed to give way to the abstraction of blood. She has now,

upwards of twenty years afterwards, had no return of that malady.

Epileptic Attacks.—Miss F. has been subject to epileptic fits for many years, and to a minor paroxysm, which she calls attacks, to which she was liable from the very beginning of her illness, though she kept no account of them for the first six years. The following is a list of these different states, the last of which sometimes occurred as often as three times a day. From September, when first taken with a fit, in the year

1794	she had	11	Fits	
1795	———	41		
1796	———	38		
1797	———	37		
1798	———	42		
1799	———	37		Attacks.
1800	———	40	———	145
1801	———	32	———	75
1802	———	41	———	194
1803	———	27	———	25
1804	———	29	———	61
1805	———	29	———	128
1806	———	29	———	158
1807	———	29	———	130
1808	———	26	———	144
1809	———	22	———	175
1810	———	26	———	233
1811	———	26	———	123
1812	———	31	———	152
		593		1743

It may be added, that this lady continued to suffer in the same manner till her death, which happened in 1823. During this whole period, Miss F. had devoted herself much to reading and writing, and had been the esteemed authoress of several volumes. (E.)

Irregular Determination following long Watching. —Mr. M., an extremely temperate man as to eating and drinking, by profession an attorney, and of the best moral and religious principles, was so assiduous in application, that in the early part of his life he for twelve years went to bed at twelve, and rose at four in the morning. When of middle age he became affected with the gout. At a more advanced period, the gout not appearing, he was attacked with insanity, which after a few weeks disappeared, and left him in good health; but two or three years afterwards he was seized with Epilepsy, for which, conformably to the defective but accredited practice of that period, he took very largely of opium, musk, and other supposed antispasmodics, which exhibited their usual inefficacy; and after numerous paroxysms, repeated through three or four successive days, he died.

Epilepsy and some odd accompanying Affections. —Mr. E., a stout tall man, æt. 40, of light hair, in the Militia, accustomed to free living, to which he supposes himself to owe fits of giddiness, accompanied with loss of sense and convulsions, in which he bites his tongue, foams at the mouth, and remains in a state of insensibility for a quarter of an hour. The giddiness continues long enough to permit him to ring a bell. They come on about once a month; and

if a longer interval takes place, then they come quicker; always before dinner: generally about the new moon. The fits are never accompanied with sickness or loss of appetite, and leave him heavy and drowsy for two hours. Not accustomed to sick headachs; but had great bleedings at the nose when young, that is, about twenty; and now has them occasionally to the amount of from half to a whole teacup, (two or three ounces,) and when this happens to any extent, he knows that the fit will keep off for two or three days. No headachs in the intermediate time. The latter end of September, after drinking rather freely, he was seized with a violent sickness accompanied with vomiting, and with a violent pain down the muscles on the left side of the neck, shoulder, and down the humerus, and also under the shoulder blade. This has continued ever since in a most violent degree on coughing, jolting in a carriage, or any other motion which shakes the part, or on keeping the arm long forward across the breast, which is then pained to the insertion of the pectoral muscles. There is also a pain and numbness below the elbow, and in his fore-finger and thumb, with occasional pricking like a sleepy part. Pulse 84, strong, and full. That in the right carotid much fuller and stronger than the left. A frequent dry cough ever since the pain. No sickness since the attack in September, but loss of appetite. Bowels open every day, probably from opening medicine.

For two or three years previously had frequent giddinesses, and, previously to the fits, had left the South Glocester regiment, and used somewhat less of

exercise. Feet apt to be cold. Face much flushed and heated during the fit, and after. If he moves the head and neck sideways in either direction, it usually pains him all down the arm to the fingers. The pain begins as high as the third and fourth vertebræ of the neck on the left side, where the part is sore to the touch as well as downwards. It is probably, therefore, an affection of the third, fourth, and fifth cervical nerves. Has violent pain about the knuckle of his fore-finger and in the thumb, and from the elbow to the ends of the thumb and fore-finger has a dozen times a-day pricking and tingling, and constantly aching in the wrist to the fingers. No headach. Walking always increases it very much when it warms him, as does the heat of the bed, or any other warmth. The tingling does not come on when his arm is straight at right angles to his body, or straight hanging down; but comes on in every other posture. Leeches were applied to his neck, and drew properly, a blister also rose well. He left Bath in two days with the following directions.

"I most strenuously recommend to you immediately to commence and strictly to persevere in the following plan, from which I cannot help expecting considerable relief, if not a total removal of your complaints. Wine and all other fermented liquors and spirits should be wholly avoided, as should all spices, pastry, new bread, hot buttered toast or muffins, shell fish, salmon, eel, and fried vegetables. The flesh of quadrupeds and birds should be eaten only thrice a week, and that

only for dinner, and in the quantity of about six ounces each day; pork and salted meats should be avoided. Twice a week you may dine on white fish, but then only in the same proportion. Your meat should be plainly dressed, and not too much done, and you should eat slowly, and chew your food well. The rest of your dinner should be made up of bread or sea biscuit, and well-dressed vegetables, including plain pudding. Your breakfast may consist of toasted bread, plain bread, or sea biscuit, with weak souchong tea, coffee, or cocoa; or it may be bread and milk, or milk porridge. Sugar and butter may be eaten in moderation. Cheese should be at all times avoided. Between breakfast and dinner I recommend you to eat some biscuit or plain cake with little sugar. Your supper may be of the same kind, or of milk porridge, or milk and water, with bread or biscuit. All your meals should be in less quantity than your appetite demands. The drink which you take should be plain water, or toast and water, or a weak infusion of the yellow rind of a lemon in a quart of boiling water, suffered to stand till it is cold. You should go to bed and rise early, and shun hot rooms and sitting opposite a fire. There is nothing with regard to which I am more anxiously solicitous than exercise. I do altogether reprobate riding on horseback, as a refinement of luxury deceptive and totally inefficacious to the purposes of health and long life. The exercise which I recommend is that of walking, which should every day be taken in the open air as far as the strength will permit. You should use it so as gently to warm,

but not violently heat you ; and you may judge of its degree by feeling after it that lassitude, after which you appear to receive refreshment from repose. To this plan no weather, except violent snow, should be considered as an obstacle ; but you should take care to cloath yourself, as that your whole body, and especially your legs and feet, may be effectually guarded against cold and moisture. If by accident you become cold from exposure to the severity of the open air, or from travelling, you should not attempt to warm yourself quickly by going into a hot room, or near a fire, or by drinking warm or strong drink, but should on the contrary restore the natural heat as slowly as possible by walking till you are moderately warm in the coldest room in the house. With regard to medical measures, it seems to me that the same means are applicable to both the complaints under which you labour. With these views I would wish six leeches to be applied once a week, as nearly as possible to the highest part of the neck affected with pain; poultices being afterwards used as before directed. The draught in the annexed prescription should be taken every morning, and two spoonsful of the mixture twice a day, according to the directions there given.

"Dec. 27, 1808."

℞ Magn. Vitriol. ʒj ad ʒij p. eff. Inf. R. ℥iss.
Acid. Vitriol. dil. gtt. iv. Ft. H. sing. aur. s.
℞ Scil. recent. gr. xxiv. Kali superc. ʒijss. Aq. ℥vi.
St. ℥j bis die c̄ Suc. Lim. ℥ss. int. eff.

Epilepsy probably from Palpitation.—Mr. H., aged 53, about seven and a half years ago had diffi-

culty of breathing and palpitation of heart, the latter of which has occurred in a considerable degree ten or twelve times since; though he does not seem to have been affected with it during exercise, which he has till lately been able to take on foot to the extent of several miles in a day. He is said to have had no inflammation of the thorax, or remarkable cough, for sixteen years. Since my attendance on him, he has had such a dulness and slowness of intellect, as not to be able to give any accurate account of his feelings, much less of his past symptoms. About three years ago he was suddenly, and without previous symptoms, seized, while walking, with a fit of epilepsy; and similar fits have recurred, with various intervals, ever since; usually without violent convulsions, but with great stupor. At one time during that period he had long continued headachs, without any particular consequences. Since his arrival at Bath, his intellects have been rapidly declining to a state of desipiency. During the fits he has a violent beating of the heart, with irregular pulse, and convulsive motions of the face and arm of the right side; while, in a fit which I witnessed, the carotid on the left beats much more strongly than on the right. His palpitations have, however, frequently occurred without a fit; nor can I find whether the fits are usually preceded by palpitation. When sitting at rest, his pulse is moderately soft, of natural quickness, and regular.

Not many days after this report was taken, as he was walking out, he fell suddenly forwards, and died in a few minutes.

He was opened forty-four hours after death.

The arteries of the dura mater, and the sinuses, were turgid and prominent with fluid blood, and the arteries of the pia mater were as it were here and there injected. The medullary substance of the brain was firm, and when cut through, every where exhibited florid bloody points, as from divided arteries; but neither in it, nor in the cortical substance, was there any where any extravasation of blood. In the ventricles of the brain there were upwards of two ounces of transparent serum, and turgid blood-vessels were seen to run along the parietes of the lateral ventricles. Wherever the brain was cut, more moisture exuded from it than usual. From two to three ounces of transparent colourless fluid were also found between the tentorium and the cerebellum, extending down between the dura mater and the medulla oblongata. An unusual quantity of bloody serum also oozed out from all the divided vessels of the brain and cerebellum.

In the thorax, the cartilages of all the true ribs were in an ossified state, the heart was uncommonly fat, of a very large size, and extremely firm, as though distended with blood. It was, however, found, on cutting into it, that all its cavities were empty. The extraordinary size and firmness arose from the strength and thickness of the parietes of the left ventricle, which, where they were greatest, amounted to an inch and a quarter. The left auricle was proportionably large, and the aorta, at its origin, full three quarters of an inch in diameter. All the cavities, the valves, and the substance of the right auricle and

ventricle, were of the natural size and appearance. The coronary veins were turgid with blood. The coronary arteries free from disease, but the left of unusual size proportionably to that of the ventricle.

The pleura costalis and pulmonalis, every where completely adhered together, on the posterior part more loosely, but laterally and anteriorly, so as scarcely to admit of being separated. There was no extravasation, or any mark of recent inflammation. The lungs themselves were in a healthy state. In the pericardium there was the usual quantity of fluid.

Modification of Epilepsy.—Mrs. S., aged seventy-five, who had been frequently subject to a giddiness in her head, began at ten o'clock in the morning in some degree to forget or misplace words, and in about half an hour had sickness and vomited. She became drowsy, and at two in the afternoon had slight convulsions of her face, became stiff in her limbs, insensible, and stertorous. Sixteen ounces of blood were taken from the arm ; immediately after which I saw her. The bleeding had removed the stertor, but her respiration was still very slow, being only 12 in a minute, regular and soft, without labour, though her pulse was 84, full, strong, and hard. Her pupils were contracted to a point, but the eyes well shut. There was no loss of motion in either hand, nor was the face at all sunk on either side.

Soon afterwards she came to herself, and in four or five hours was capable of conversing without difficulty, but was not aware either of what had happened to her,

or of the time of day. In a few days she recovered perfect health, and mental energy.

Hardness of Paralyzed Muscles in Epileptic Patient.—Mr. S., aged about sixty-six, of a very full habit, leading a sedentary life, and accustomed to receive great relief under various disorders from bleeding, which, however, he had for several months disused, was suddenly seized with hemiplegia on the left side, so however that he could move his leg and imperfectly the fingers. There was no affection of the head or eyes. On the following day he had convulsions on the same side, with stertor and insensibility. This state was relieved shortly after by large bleedings from the temporal artery, and brisk purging, but was succeeded by violent headach, and total want of motion and sensation in the left arm and hand.

In a few days he moved his leg well, and was able also to move his fingers in various directions, though not without great importunity on my part; and at the same time, while the arm was apparently at rest, the biceps and other large flexor muscles of that hand and arm were much more firm and rigid than those of the other.

Case and Dissection.—Mr. B. P. B., aged 42. Two or three months ago, after several days of costiveness and occasional sickness and uneasiness about the head, to all of which he was occasionally liable, was seized with an epileptic fit. He was bled at the arm, and afterwards at the temporal artery, to the extent of at least sixteen ounces each. He recovered tolerably well after the first fit, so as to take several doses of opening

physic, but had repetitions of the fit at various intervals for five or six successive hours. He appeared to experience great relief from section of the temporal artery, which was not practised till he had had three or four attacks. He then became delirious, so that during the greater part of the night it was difficult to confine him to bed. During the night great evacuations followed the use of the medicine, and in the morning he had little complaint, except general soreness, pain and some other uneasy sensations about the head, with slight quickness of the pulse. He was entirely debarred the use of spirituous fermented liquors and animal food. Kali præp. and fresh Squills were given frequently in the day, with Lemon Juice, during effervescence. His bowels were kept open chiefly by Saline Purgatives, and leeches were frequently applied to his temples. By these measures employed with more or less activity according to circumstances, frequent threatening of fits, which shewed themselves by uneasy feelings about the head, or sleep disturbed by frightful dreams, were from time to time obviated. An issue in the arm was now added, and his health by these means gradually returned.

Previously to the last fatal attack he had only eaten meat twice a week. Unfortunately he went to a crowded Theatre, and though he slept well after it, on the next day, Saturday May 3d, complained of considerable headach, which induced him to bind his head tightly with a handkerchief. He neglected to send for medical assistance, saying the complaint was only what he was accustomed to. At nine P. M. he

was seized with an epileptic fit, from which he recovered so as to be able to walk, but was delirious. Soon afterwards he was seized with another, which was repeated at short intervals, without any recovery of senses till one o'clock, when he died. The convulsions chiefly affected the right side of his head and neck, the eyes, and right arm. The left, after the second attack, did not move either voluntarily or involuntarily, and was quite relaxed. He was bled from the arm ad ℥xx; and though the action of the carotids was very strong, and his pulse very quick, the temporal artery, though divided in various parts would not bleed. Glysters were given, but did not return. Both pupils were considerably contracted. Pulse 140, 150.

The head being opened, nothing particular appeared on the dura mater. The vessels on the pia mater were unusually turgid with blood, especially on the left side, in which a great number of the minute branches were, in different parts, injected with florid blood, and the membrane proportionably thickened. In the right hemisphere of the brain there was no observable deviation from the healthy state. In the left, in the medullary substance, a considerable number of minute vessels were filled with red blood. The ventricles containing the usual quantity of fluid amounting to an ounce, and the plexus choroides on both sides in the natural state as to colour, though on the left side something larger than usual. There was no extravasation in any part of the brain or cerebellum, both of which were of a firm consistence.

Mr. B. was a tall, thin, remarkably well-made man, with light hair, and florid complexion. He had been formerly in the army; three years in the East-Indies; was what is commonly called a temperate man, and had enjoyed good health, except in what are called nervous affections of the head. In 1803, he had a severe pleurisy, which gave way to bleeding, &c. He was accustomed to much exercise during the sporting season, but led a sedentary life at Bath, and was irregular and capricious as to his appetite.

This case is, in my opinion, considerably instructive. There was no local disease, except blood urged in preternatural quantity into various parts of the left hemisphere of the brain, and which, by its stimulus, doubtless produced privation of senses, convulsions on the opposite side of the body, and eventual death. Nothing probably could have saved life, but means which should have been efficacious in arresting the preternatural determination of blood to the brain. It is curious to observe, both from the paleness and coldness of the face, and the little dilatation of and flux of blood from the temporal artery, that the system of the external carotid was unusually empty, while that of the internal carotid on the same side was unusually full. If the vessels of the brain are more capable of being relieved by arteriotomy in the temple than by bleeding at the arm, the operation ought certainly to be practised there first, because the loss of a large quantity of blood from the arm may probably so far reduce the fulness of blood in the external carotid, as to make bleeding from the

branches of that artery afterwards impracticable. It is not impossible that this may have taken place in the case before us. [1806.]

Connection between Convulsions, Epilepsy, and Apoplexy.—Mr. F., aged sixty-four, three months ago had slight apoplexy, with slight hemiplegia of right side. Yesterday, Nov. 30, 1808, he was seized with an epileptic fit, in which he was violently convulsed, and then comatose, with a quick, full, and hard pulse, and the strongest pulsation I ever felt or saw in the temporal arteries. The convulsion was chiefly on the right side of his face, arm, &c. On being bled he soon recovered his senses, and has had no return of insensibility, but has very frequent fits of catchings and convulsive movements of the right arm, especially on attempting to move it. Has, also, more slight twitchings of the left leg. Complains, when asked, of giddiness in the head, but no pain. Pulse 92, and somewhat intermittent and irregular, rather full. That of the carotids enormously full and strong. Respiration 18, very irregular as to period and depth, sometimes amounting to very deep sighing. These complaints were preceded by great dulness of intellect, and depression of spirits, and immediately before the fit, he had an indescribable anxiety.

On the 12th of December, sitting up in his chair, he was seized with a fit of vomiting, and died almost in a minute. He had recovered the use of his arms, and lost all the spasmodic twitchings, but was heavy and stupid, not in general able to finish a sentence.

Case of Epilepsy and Treatment.—" Miss E. S. was born in 1783. Wheu young, she was subject to repeated attacks of ophthalmia, and at about the age of twelve or fourteen years, she bore striking marks of the mischief they had produced on the cornea; she also had frequent headachs, and as long as she can recollect, has been subject to peculiar feelings in her head, which she is at a loss how to describe, except as being similar to what she has since experienced, as generally preceding her attacks of epilepsy. These sensations were at short intervals, and not noticed by her friends until their attention was drawn to them by herself observing, on seeing her brother in an epileptic fit, that she was convinced her feelings were a modification of her brother's disorder. She had a very transient loss of consciousness, followed by headach and vomiting, after which she felt well. She cannot recollect how frequent these attacks were, but as she grew older, they became stronger, and the subsequent vomiting, which she looked upon as a critical relief, ceased. The first clearly defined epileptic fit appears to have taken place in 1803, when she was in her twentieth year. She dropped down, was strongly convulsed for several minutes, and remained for many hours after in a state of stupor; but I strongly suspect that she had had, in the nights previous to this, similar but less strong attacks. Miss E. S. had not a florid complexion, her temperament of what is called the saturnine cast. Her strength and appetite moderate. The state of her bowels usually confined, sometimes greatly so; her sleep disturbed,

having most of the symptoms ascribed to worms. Menstruation, which first took place about the age of fifteen, painful, irregular, and scanty. After the first clearly defined epileptic fit in 1803, fits returned at various intervals; sometimes three weeks, at others, as many months elapsed between the attacks. From Miss E. S., memoranda, they appear to have been the most frequent in 1806: they generally occurred during sleep. I am certain they are really much more numerous than she has remarked. She was sensible of their increasing strength, and at the time of her consulting Dr. P. her capacity and memory were most materially impaired. He saw Miss E. S. first in March 1808, and directed her to apply six good leeches to the temples every week, to keep open her bowels with a Sol. of Magn. Sulph. in Inf. Ros. and to take the following pills: ℞ Pulv. Scil. exsic. Zinc. Sulph. āā ʒj Cons. q. s. Ft. pil. cxx. Of these she took two noon and night, increasing gradually until she took twenty per day: these, with his system of diet and exercise, were rigidly persevered in, and she had no fit until the middle of September. He now substituted for the pills, ℞ Ceruss. Acet gr. j. Cr. Tart. gr. xij. Inf. Rosæ ʒx. ft. H. mer. et h. s. s. for a week, and then omit for a week alternately for four weeks, taking regularly every morning a dose of Sulph. Magn. in Inf. Ros. Her head was now washed every morning with cold water, and at the same time a warm pediluvium used. The leeches were increased to eight weekly. Notwithstanding caution and watching, the Ceruss. Acet. brought on an obstinate

and dangerous costiveness, so as to stop its use until November, when it was resumed for three days, and left off for the same period alternately until the 20th of January, 1809, when it was suspended for a month. A sudden change from cold to hot weather took place the middle of February, and on the 20th Miss S. had a fit. She now resumed the Ceruss. Acet. for two months, when it was laid aside, and 3 grs. of Calomel, with a dose of Castor Oil the next morning, taken twice a week; the leeches, and cold water to the head, continued. The beginning of July, and the latter end of September were the two last attacks Miss S. experienced, both slighter than any she had of many years, though for several months she experienced occasional headach, stupor, and heaviness. She continued to take for a week at a time the pills with Zinc and Squill, and sometimes the Ceruss. Acet. until the end of 1809. She also used the shower bath at 82, which she continues. From the beginning of 1810, the heaviness over the forehead with the attending unpleasant feel gradually diminished, and the latter end of that year, she may be said to have been perfectly cured, not only of her fits, but of all distressing sensations in her head; and she has continued, until the date of this letter, to be more capable of bearing bodily fatigue, and mental exertion, than she ever was in her life, notwithstanding she has never for five years tasted animal food, or broth, egg, milk alone, or any kind of fermented liquor, but has lived on farinaceous and vegetable food entirely, and those in small quantities. She can walk with perfect

ease ten miles at once. She is somewhat thinner than before she began Dr. P.'s plan, but has the appearance of a very healthy young woman. She menstruates regularly, with little or no pain, her bowels are less costive, her head clear and comfortable, her sleep refreshing and composed, and her general feelings and spirits comfortable and good. In winter she complained of occasional pain and fulness in her stomach, which gave way to a dose of Calomel; but since she took, in May, by his advice, a small quantity of chicken, or boiled lamb or mutton, once a week at dinner, she has had no return of pain, nor has she found any inconvenience result from it. In all other respects of diet and exercise, she never deviates from the plan she has now pursued for five years and a half. She now and then takes a dose of Calomel and Castor Oil, and puts a few leeches on her temples. I am sorry I cannot furnish you with the state of her pulse at different periods with any accuracy. No other evacuation of blood, except by leeches, was had recourse to.*" [Sept. 20, 1813.]

Miss E. S.'s account of the periods when she has had fits to her own knowledge:

1804	Dec.	9	1805	Aug.	3
	——	31		Dec.	23
1805	April	7	1806	Jan.	31
	June	21		Feb.	20

* The above history of a case treated by Dr. P. is written by Mr. Logan, of Leeds, and there is a similar one by the mother of the young lady. It appears, by a letter dated April 1814, that Miss S. "had continued perfectly well." Her stomach complaint was cured by a gradual return to animal food, which she still eat sparingly.

1806	March	27	1807	Oct.	4
	April	27	1808	Jan.	16
	Aug.	24		March	19
	Oct.	24		Oct.	26
1807	Feb.	9	1809	Feb.	20
	Aug.	3			

Miscellaneous Remarks.—It is said that in *Apoplexy* the extravasation is not the cause of death, because persons recover from states of extravasation, producing apoplexy. This is just as reasonable as to say that in fatal inflammations of the lungs the inflammation does not kill, because some persons recover from inflammations of the lungs. All which in such cases is meant is, that the extravasation is a remote cause of death, the effect of which must be proportionable to its circumstances, as those of degree, and perhaps rapidity and place, relatively to the state of the part acted on.

Lethargy distinct from Apoplexy.—Mr. D., aged more than eighty, was seized with vertigo, which gradually increased for several hours, till it ended in vomiting and insensibility. The sleep was profound, and accompanied with very irregular and stertorous respiration; but he would sometimes wake up, and become sensible, answering questions. No paralytic affection of any part was perceivable. His face was at first pale and cold; but afterwards very florid and hot, his pulse, especially in the carotids, uncommonly strong and full.

He died several days after, without hemiplegia.

Was not this a case of mere pressure without extravasation?

Cases.—Lady S., of a fat and full habit, too much accustomed to a sedentary life, between forty and fifty years of age, and menstruating in the irregular manner which is common at that period, was suddenly seized with speechlessness, general confusion of intellect, paralytic relaxation of the left side of her face, and that only, and almost constant straining to vomit. The day after she was so far recovered as to feel her indisposition, complained of stiffness on the side of her face, wept much, and wondered what was the matter with her.

Two or three days having elapsed, the face recovered its natural appearance and sensation; and shortly afterwards the vomiting ceased; but she had pain in her head, and great mental depression. She sometimes talked to herself, and, as her attendants judged, incoherently. When, however, I visited her, I never perceived this incoherence. As soon as she began to speak, which was in a few hours after the seizure, she did not appear deficient in the accuracy or flow of ideas, but had almost totally lost the power of expressing them. She had forgotten the names of all her most intimate friends, and after many days was unable to finish a sentence, if it consisted of more than three words. She was sensible of the defect, and suffered much unhappiness from it. At the end of five weeks from the first seizure it had not wholly ceased, though her general health and strength seemed otherwise perfectly restored.

Sudden Death from Extravasation of Blood in the Base of the Cranium.—A labouring man, between forty and fifty years of age, after returning from his work, on Saturday evening, August 22d, 1812, went to a barber's to be shaved about half past seven o'clock, and immediately left the shop, apparently in perfect health. A little after eight o clock he was found in the same street lying senseless, was carried into a neighbouring house, groaned, and immediately died.

No marks of violence were visible on his head, or any other part.

His head was examined on the following day at one o'clock, by Mr. G. Norman, in my presence.

The blood was fluid, and ran out through several holes in the sagittal suture and parietal bones, when the scalp was removed from the cranium.

The examination of the brain was made after it had been carefully removed out of the cranium, and inverted. Here the cause of death at once appeared. Extravasation of blood, which was black and coagulated, had taken place to the thickness of a shilling or more between the pia mater and the several parts which it invested, from the posterior part of the olfactory nerves, all round the several nerves behind them, comprehending the central part of the base of the brain, and extending from thence backwards to the pons varolii, all round the medulla oblongata, and between the two lobes of the cerebellum ; the coagulum being thickest in the two parts last described. A small coagulum of a similar appearance was also

found in the anterior horn of each lateral ventricle, and also in the posterior horn of the right, in which there was also a minute coagulum and some clear fluid of a beautiful purple colour, exactly similar to that of a weak decoction of logwood. The fourth ventricle was full of black coagulated blood. On the outward part of the posterior and middle lobes of the cerebrum, especially on the left side, blood of a florid colour was extravasated in patches under the pia mater, so as to give an appearance of scarlet paint ; and this state extended itself from the boundaries of the dark coagula before described to some distance on the superior part of the hemispheres on each side. A careful but ineffectual attempt was made to discover from what part this hæmorrhage had originated.

The pineal gland was three or four times its natural size, being swelled out into a vesicle full of fluid, which contained some hard and perfectly transparent concretions.

The pituitary gland was apparently in its natural state. The large or anterior lobe being cut horizontally through, appeared to have red thin edges, which no longer existed when the investing membrane was removed, and which therefore were no more than the edges of that membrane itself. The internal substance was firm, elastic, and of a mottled appearance, of different shades of yellowish brown, with some parts tending more to white, and others to a faint red. This variegation was disposed without any apparent regularity. When the sides were hard pressed, there first flowed from the surfaces a little

transparent fluid, and afterwards a very small quantity of what resembled cream or pus slightly reddened.

The infundibulum arose from the posterior part of the greater lobe, on the upper side, with a sort of bulb or expansion, and passing forwards for about half a line bound down in a depression between the two upper sides of the lobe, and gradually narrowing, became then disengaged from the body of the lobe.

When this lobe was cut through its centre from behind forwards, I could discover nothing of that triangular cavity described by Wenzel.

All other parts of the encephalon appeared to be in their natural state.

Extravasation in Medulla with Dissection.—Mrs. T., a widow, aged sixty or upwards, rather thin and long, subject to maladies denominated nervous, on the morning of February 26, 1813, was found lying on the floor, on which she had fallen out of bed. All power of her left side was lost, and its sensibility very considerably impaired; but she was able to speak with ease, and her faculties were in no great degree affected. The eyes were in a natural state.

After a lapse of some weeks, she regained the sensibility of the affected side, but not the slightest power of motion. Her pulse was usually too quick; her nights were bad. She had occasional pain in her head, and shewed a considerable increase of the irritability and impatience which were natural to her. The attempt to prevail on her to be lifted out of bed was rarely successful; and after a short time, though supported, she complained that she was unable to bear

the sitting posture, and was eager to return to her bed. All tonics, however slight, disagreed with her; but she obtained occasional relief from loss of blood in various modes, and from purgatives and neutral salts.

In this state she continued, with little variation, till the 1st of June, when between three and four in the afternoon, she was seized with vomiting and speechlessness, unattended by convulsions or loss of her senses. There was no falling of her mouth, and no dilatation of either pupil. She could scarcely put out her tongue, and was unable to swallow any solids. Her pulse was quick and weak, and she passed her urine and stools without notice. Her side remained in the same state as before. She was extremely attentive to every thing which passed around her, and clearly understood all which was said to her; and though unable to articulate, made intelligible replies, either by a faint motion of her lips, so as to express yes or no, or by that of her head or right hand. It was evident that it was merely the power of articulation, and of regulating the sphincter muscles, which was lost in the second attack. These circumstances little varied during what remained of her life.

Various means were employed, aperient medicines, leeches to the temples, saline draughts, and on the 18th a gentle opiate at night.

In consequence of these means the patient became more tranquil, and went on, without any new symptom except that of rapidly increasing emaciation, till the 26th of June, when the pulse, which had usually been from 96 to 100, rose to 132, with augmented

insensibility with regard to surrounding objects. That evening, between eight and nine o'clock, without convulsions, or labour of breathing, but after a rapid faltering of the pulse, she died.

During the whole course of the disease, no change occurred in the pupils, and no power of voluntary motion returned to the affected limbs, though the leg and thigh were not unfrequently drawn upwards with a convulsive movement.

She was opened on the 28th of June, at six in the morning, by Mr. G. Norman, in the presence of Mr. Sloper, and myself.

On the surface of the left hemisphere of the brain, about the upper part of the occiput, there was some extravasation of transparent colourless fluid between the tunica arachnoides and pia mater, and a smaller quantity of a similar fluid in the same situation on the right side. In these parts, the veins of the pia mater were very full of dark blood. The centrum ovale was of a greyer colour than natural, but was not particularly vascular. Within the medulla, at the back part of the right posterior lobe, there was a fissure on the same level with the corpus callosum, reaching backwards into the cineritious substance, and forwards in a somewhat curved direction full two inches and a half, and apparently from half an inch to three quarters of an inch in diameter, containing nearly half an ounce of dark grumous blood, with scarcely any admixture of serum. The parietes had none of that breaking down of the medulla, or approach to purulency, which is often in these cases

seen, and had no bloody points, such as those from which certain authors suppose extravasation to have proceeded. No rupture of any vessel could be found.

On the outside of the right ventricle, to which it was nearly contiguous, there was a second rupture or fissure, which on its anterior boundary intercepted, and seemed to have destroyed, the posterior angle of the right corpus striatum, and extended backwards, by the outer side of the right thalamus nervi optici, towards the posterior lobe of the cerebrum, through a distance of two inches and a half. The side of the thalamus itself, through its whole length, was involved in the fissure, which was nearly three quarters of an inch in diameter. It contained no detached fluid whatever, but its sides were smeared with a viscid liquid of the colour of yellow ochre mixed with a little vermillion. This being carefully washed off, the walls of the fissure were found to be somewhat rough and harder than the rest of the medullary substance; and, to some short depth all round, were of a brownish colour, but without any appearance of bloody or livid points. On the lower surface of the anterior part of this fissure, there were small branches of veins full of dark blood, such as were discoverable on the corresponding part of the brain on the other side, by gradually scraping it away. No spot, however, could be found from which the blood, now removed by absorption, could be supposed to have flowed.

In the centre of the right lobe of the cerebellum there was a third hole, of an oval shape, the longest diameter of which was somewhat more than half an

inch, full of thick blood of a brownish orange colour, somewhat darker than that on the surface of the last mentioned fissure in the cerebrum.

The pineal gland contained the usually gritty matter. The corpora bigemina were large and distinct. The olfactory, optic, and other nerves, together with the pons varolii, medulla oblongata, and all other parts of the substance and membranes of the encephalon, were in a natural state.

The lateral ventricles contained from two to three drachms of a somewhat muddy serous fluid. Each plexus choroides was swelled into large hydatids, of which the right was the largest, and formed an oval congeries of vesicles containing fluid, three quarters of an inch in length, and one third of an inch in its greatest diameter.

The trunk of the basilar artery, and those portions of the carotids which run through the canales carotici, were very large.

When the brain was taken out of the cranium, an ounce or more of serous fluid was found in the hollow of the cranium.

The heart was nearly empty of blood. No disease was discoverable in any part of the thorax or abdomen.

Sanguineous Extravasation from habitually Enlarged Vessels.—Colonel W., aged fifty-seven, thin and above the middle size, who had served many years in the Indian army, and had lived freely, but for the most part escaped the usual diseases of that climate, from the period of his return to England enjoyed tolerable health till the month of November

1810, when he was suddenly seized with an affection of the head, of which I could not obtain any particulars, except that for several hours after he was disposed to involuntary laughter. This seems to have been the commencement of the malady under which he continued ever after more or less to labour.

The mode in which the malady shewed itself was by a weight and almost constant giddiness in his head, threatening falling. For this complaint he was for a considerable time under the care of Dr. James, who very judiciously reduced his diet, and kept him for several months under the constant administration of gentle aperients, with occasional blood-letting.

From this course Col. W. derived great benefit; but as he became somewhat thinner, and apprehended that he should be weakened, he could not be prevailed on to persevere in this plan to its due extent.

I first visited him on the 23d of January, 1813. He continued to suffer the complaints already described. His pulse was always from 100 to 120 in a minute, very hard and full in the radial arteries, but enormously so in the carotids and temporals. His face was very red. His appetite was good. The use of stimulant drinks was precluded; the quantity of animal food greatly reduced, blood-letting and purgatives were occasionally employed, and gentle exercise recommended. From this period I now and then saw Col. W., who continued under the constant care of Mr. Sloper.

During the first week in June he experienced some aggravation of his complaints; and on the 8th, I

directed a repetition of cupping ad ℥xij, which had been lately administered by Mr. Sloper, and a more liberal use of saline purgatives.

On the 15th, after breakfast, between ten and eleven in the morning, the weather having become suddenly hotter than usual, as he was riding through the streets, he was suddenly seized with such an increase of the disorder in his head as obliged him to dismount and go into a shop, where, after having just mentioned the name of Mr. Sloper, he became senseless. Mr. G. Norman was the first who visited him. He had then no respiration, nor any pulse either in the radial or carotid arteries. After about a minute, however, he made one sob, and Mr. Norman put far down into his throat some brandy, which he imperfectly swallowed. Some other irregular sobs then followed, after which the heart was perceived again to pulsate. More brandy was given; and then the temporal artery began to beat full and strongly, about 60 times in a minute; and an irregular and slow respiration followed. The temporal artery was opened, and black blood flowed in a full stream. After the loss of three or four ounces, the pulsation of the radials was distinctly felt, the breathing became more regular, and the blood more florid, and some colour returned to the lips and cheeks. There was no sweating. The bleeding being continued, respiration became more slow, and the blood more dark, accompanied with slight convulsions of the face; almost immediately after which, at eleven o'clock, the patient ceased to breathe.

Col. W. had been dead more than half an hour, before I could reach him.

He was opened the next morning at six o'clock by Mr. G. Norman, in the presence of Mr. Goldstone, Mr. Sloper, and myself.

The dura mater was very strongly attached to the cranium. The medullary substance of the brain was of a greyer colour than usual, and exhibited on the surface of the layers made by the knife an extraordinary number of points, from which dark blood oozed and flowed. The lateral ventricles contained between two and three ounces of deep-coloured bloody fluid floating on dark grumous lumps of blood, the latter of which were chiefly in the left ventricle. In the medullary substance itself there was an irregular fissure, apparently beginning on the posterior and outer side of the left thalamus nervi optici, passing through the posterior part of the thalamus itself, and communicating with the ventricle. All these ruptured parts contained a good deal of grumous blood, which was found also to have burst the septum lucidum and fornix at its anterior parts, filling the third ventricle, from whence it extended under the corpora bigemina into the fourth ventricle and cerebellum, so as to compress the superior part of the pons varolii and medulla oblongata. The quantity of grumous blood producing this compression amounted to nearly two drachms. Blood in a similar state was also found, to the quantity of about half an ounce, between the dura and pia mater, on the back and inferior part of the left posterior lobe of the cerebrum; and it was

concluded, though the communication was not actually traced, that this extravasation arose from a continuity of the rupture near the thalamus nervi optici before described. Throughout the whole of the fissure, the substance of the brain forming the parietes was, as it were, mixed with the surface of the blood or fluid in the several parts of the cavity. No source of the extravasated blood could be discovered. The carotid, vertebral, and basilar arteries, within the cranium, were unusually large, and the trunk of the last of those arteries contained several spots of beginning ossification.

In the abdomen, the stomach was very capacious, and contained a full quart of semi-fluid food. The vessels running in or immediately within the villous coat of the whole cardiac portion were very large, and, as it were, injected with blood, giving that part a beautifully ramified appearance. Among these there was one patch of a dark colour, as if from blood extravasated immediately under the villous coat. None of these appearances occurred in the pyloric portion. Within the duplicature of the peritoneum, immediately on the pancreas, there was a broad effusion of dark coagulated blood. The liver, spleen, and all other viscera of the abdomen, were wholly free from disease; and there were no where any preternatural adhesions of the peritonæum.

In the thorax, the lungs were in a healthy state, having on their surface the greyish blue mottled appearance common at an advanced period of life. The heart had little fat, and was unusually large and

firm. Its valves were perfect; and scarcely a drop of blood was found in any of its cavities. There was no preternatural effusion, or adhesion between any parts of the pleura.

Determination to the Head cured by Bleeding and low Diet; and afterwards, under other measures, suddenly fatal.—Ten or eleven years ago, Miss C., the subject of the dissection which follows, was under my care for a great degree of those complaints which are called nervous, chiefly pains in her head and various parts of the thorax, accompanied with a quick pulse. For these I employed general blood-letting, and the repeated application of leeches to her temples and thorax, ordered low diet, and the use of purgatives and saline medicines, with Hyoscyamus and James's Powder. By these measures she was restored to comfortable health.

A year or more afterwards, while in London, at her father's house in Hill-street, she was seized with violent action of the heart, attended with great determination of the blood to the vessels of the head. She was very skilfully treated by Dr. Fraser, who was under the necessity of bleeding her very copiously. In this state I visited her in London while she was evidently recovering, though much reduced by the long continuance of a violent disease, and the lowering measures which were essential to her safety.

After this time she once or twice visited Bath, and remained for the most part, though not always, free from her former complaints.

On the 22d of January, my son Edward was with her for an hour and a half, and she appeared in good health and spirits. The following account is given by her brother:

"She eat a good breakfast on Sunday, Jan. 24, "1813; and on her return from church complained "of great pain in her shoulder and side. She went "and laid upon her bed for a few minutes, and then "got up to the fireside, and dropped down dead "immediately. All this passed in the course of five "minutes; and medical aid reached her just as she "was expiring. On Saturday I was with her twice, "and she told me she felt rather a chill from walking "in the extreme cold, but looked, and talked, and "seemed as usual, in spirits."

The body was examined by Mr. Heaviside and other surgeons. On removing the skull, the vessels of the membranes and of the brain were as turgid as they possibly could be, with a fluid between them and on the surface of the brain, universally diffused. The substance of the brain itself was of a firmer texture than usual; and at the basis of the skull there was a considerable quantity of extravasated blood. On examining the cavity of the chest, the lungs were found to adhere to the pleura in several parts on the right side, but were perfectly sound and uninflamed, as were the other contents of the chest. The whole mischief being confined to the head, which was sufficient to explain the cause of death.

Extravasation of Blood in the Medulla Cerebri, with Dissection.—I understood that about five weeks

previously to my visiting Mr. T., he had been, without warning, seized with what was called a fit, exhibiting symptoms which were said to shew a combination of epilepsy with apoplexy. In consequence of bleeding and other means, he in a short time recovered pretty nearly his usual health.

When I saw him, he was lying in a state of perfect insensibility; but I was given to understand that a short time before my visit he had been considerably convulsed, foamed at the mouth, and had passed fæces involuntarily. The pulse was frequent, full, and occasionally intermitting. The breathing was much oppressed. Half an hour before this time he had been largely bled from the arm without any relief; but as soon as, by my direction, blood was taken from the temporal artery, he came to himself, and answered rationally, though very slowly, the questions which were put to him. The tongue was very foul. The pulse now became rather slower, but still intermitted. Although, however, this intermission was said to be habitual to Mr. T. in his best health, yet still, from its great frequency, I presumed it to be now in a good measure owing to disease. He complained much of pain in the left temple, darting through his head to the opposite side. His vision, as well as sense of hearing, were unimpaired. His mind evinced disease; for although, when roused, he could talk and answer questions rationally, he was childishly obstinate, refusing for a long time to take food or medicine when offered him, and frequently laughing without any cause. His memory also

seemed much impaired. He slept much. His bowels were in a very confined state.

By means of repeated cupping, leeching, and purgatives, in about five weeks he became so much better as to walk out; the pain in his head became less; his appetite returned; the pulse, in point of frequency, became natural, though the intermission continued, but not so repeatedly. His mind, however, remained affected; he was extremely obstinate, and the judgment was evidently impaired, though he could still mentally sum up a considerable number of figures proposed, a practice for which he had been very remarkable.

About this period, a slight failure of the power of motion in the right side was observed. His speech was not so distinct as formerly; he became subject to sickness and vomiting, and his pulse became frequent. The fæces and urine were now and then passed insensibly; but this happened principally during the operation of purgatives. His bowels were extremely torpid, and what passed was of a dark green hue, and very offensive. His tongue became very foul, and thirst was urgent. He complained much of pain in the left temple, became extremely inactive, and preferred remaining in bed, to which he had formerly been averse. When up, he generally reclined his head on a table, applying his hands to his temples, as if to procure ease.

In this state, sometimes better, sometimes worse, he continued for about six weeks, when early in the morning he was seized with a fit, in which he was

considerably convulsed, and insensible. In an hour after, when I saw him, he had come to himself, but was considerably more torpid than before. This state continued during the rest of his illness. He lay without speaking the greatest part of the day, though when roused he was capable of conversing pretty rationally. The pulse was now much slower, between 50 and 60 in a minute, and still intermitting. When asked where his pain was, he constantly applied his hand to the back of his head. The paralytic symptoms continued. Occasionally slight convulsive motions of the muscles were observed, during which he appeared insensible. His strength gradually failed, and there was much emaciation. The mind became more and more torpid. Respiration was remarkably slow, and at length, about six weeks from the last fit, he died without a struggle.

Mr. T. had been a remarkably temperate man, and used a good deal of exercise. No cause was assigned for the first attack. So far Dr. Crawford; whose account precisely accords with what I saw immediately after two different fits.

Mr. T. was opened, in the presence of Dr. Crawford and myself, by Mr. Cruttwell.

The dura mater was unusually vascular, and exhibited in several places a blood-shot appearance. On the surface of the left hemisphere of the brain there were several opake patches from extravasated lymph between the tunica arachnoidea and pia mater, and a small quantity of fluid was effused between these membranes. The tunica arachnoidea over the right

hemisphere was drier and more vascular than on the other side. On making a transverse section of the brain, a cavity was discovered on the right side in the posterior part of the front lobe, in which lay a loose coagulum from one to two drachms in weight. The clot was of a dark colour, and no serum was observed in the cyst. The situation of this cavity was near the surface of the brain, but extending into the medullary substance, which, to a considerable extent around, had become of a dusky red colour and semi-fluid consistence. Towards the surface, the cineritious substance was in an ulcerated state, and the pia mater was rough, and beginning to ulcerate. In the ventricles about four ounces of clear serum were found.

No other mark of disease was detected in the brain or cerebellum.

Death from Intoxication, with Dissection.—Wm. F., aged about fifty, a day labourer, very strong, while on duty as a watchman in this city, about a quarter before one o'clock in the morning of the 20th of August, 1812, drank in the space of a few minutes more than a bottle of spirits undiluted with water. After this, he cried the hour at one o'clock, and again at half past one; but was not heard afterwards, and at three o'clock was discovered lying on the ground, senseless, and extremely cold. He was taken to the watch-house, and medical assistance within two or three hours obtained. At one P. M. he was visited by Mr. Geo. Norman, who found him with a strong full pulse of about 50 in a minute, and breathing

with difficulty. Various means were employed; but he died in an hour from that time.

He was opened by Mr. Norman, in my presence, on the following day at three P. M.

All the depending parts of the body and limbs were livid, and before any incision was made, the corpse emitted an extremely putrid smell.

When the scalp was removed, much blood flowed from it, and from many vessels running through the cranium itself.

The dura mater adhered very strongly to the cranium; but none of the membranes exhibited any unusual degree of vascularity. The medulla, when cut, was every where full of small points, pouring out blood of different colours; and its substance was of a browner shade than natural. The lateral ventricles contained a considerable quantity of clear fluid. There was no observable deviation from health in other parts of the brain, &c., except that the pineal gland was of a livid semi-transparency. The pituitary gland was taken out of the fossa, and carefully examined. It consisted of an anterior and posterior lobe, of the due proportions. The infundibulum attached to the former, as well as the gland itself, was of a deep red colour. When the anterior lobe, which was soft, was vertically divided by a transverse section, the appearance of the substance was exactly similar to that of kidney. Much bloody fluid ran out from the whole of its cut surfaces, and when they were pressed on, what flowed out exactly resembled purulent matter, or diluted medulla. The small posterior

lobe exhibited the same appearances; but was of a softer texture than the other lobe. Both were easily broken down by pressure.

In the circulus arteriosus there was no deviation from the natural state, except that the anastomosing branch of the carotid artery, before the union of the optic nerves on the left side, was considerably larger than that on the right.

The lungs were inflated with air. The heart was large, strong, and moderately fat. There was no water in the pericardium.

The diaphragm appeared to be so driven upwards, as very much to straighten and reduce the capacity of the thorax. This arose from the great distention of the stomach and intestines, chiefly from flatus. Before the alimentary canal was examined, there arose from the abdomen a very strong smell, much resembling that of a sour fermenting liquor like cider. The stomach contained about a pint of fluid, somewhat yellowish and opake, which had something of the same smell, but was not at all inflammable. The stomach was flaccid, with no appearance of contraction in its muscular fibres, or of inflammation in its villous coat. The blood was every where fluid. The pupils of the eyes were much dilated.

On the Effect of Vomiting in Apoplexy.—Apoplexia paralytica is owing always to pressure, and generally, if not always, to extravasation in the ventricles or medullary substance of the brain. The question then is, whether vomiting is good in hæmorrhage in the brain?

Vomiting certainly stops some discharges of blood. Thus I have seen Superacetate of Lead immediately stop vehement uterine hæmorrhage in Mrs. C., as soon as it produced vomiting, but not before. She was seized with uterine hæmorrhage three weeks after being brought to bed, and in twenty-four hours, according to the report of Mr. Rundell, surgeon, had lost sixty-four ounces of blood in thirty-six hours. Five grains of Saccharum Saturni were given every four hours, the fourth dose produced vomiting, and then the discharge, which before was not lessened, ceased and did not return. She had no disposition to syncope.

So in hæmorrhage from the lungs. A Lady was seized several days running, nearly at the same hour, with hæmoptysis. In order to stop it, I ordered a solution of Emetic Tartar to be given in small doses, so as to nauseate her just before the usual period of attack. It failed however to nauseate her, and the spitting of blood came on as usual; on repeating the dose, she vomited, and immediately the hæmoptoe ceased, and never returned. E contra, Mrs. L., Jan. 1808, had hæmorrhage from the lungs, much increased by Emetic Tartar given in quantities of half a grain, so as to vomit.

On the other hand, also, bleeding at the nose is often produced by spontaneous or artificial vomiting. In Mrs. M., a month ago, September or August 1807, great epistaxis, when abated, was immediately brought on by spontaneous straining to vomit; and Mr. C., this day Sept. 23d, 1807, who by falling from a

wheel chair cut his temple, at eleven o'clock, which had ceased to bleed, had the hæmorrhage of florid blood immediately in my presence, at two o'clock, renewed by spontaneous vomiting.

Perhaps the difference in these cases may shew a different operation on the branches of the aorta ascendens and descendens. The analogy is, however, certainly unfavourable to vomiting in hæmorrhages in the brain. I have known a person die suddenly in artificial vomiting, but I could not ascertain whether it was with cerebral affection. Nervous headachs are generally very much aggravated by emetics. Swelled testicles are said to be considerably relieved by vomiting. Might not swelled legs, or inflammation or other diseases of the lower extremities or branches of the aorta, be relieved in the same way; all by directing the determination to the upper branches?

The beating of the heart makes the brain visibly protrude in fractured skulls, in which the brain is often laid bare. Does vomiting in such cases produce the same effect? If so, it is evident that it fills the vessels of the brain, and therefore must be bad in apoplexy and hemiplegia, which arise from hæmorrhage there.

Coughing, especially where it goes to great extent, and produces perfect expiration, and difficult inspiration, accompanied with violent increase of general acceleration of blood from muscular action, as in pertussis, makes the face red, and hot, and swelled, and at the same time often produces extravasation of florid blood from the nose, ears, and mouth, especially the two former, and in the cornea.

In this case the action seems not dissimilar to that of vomiting, which, indeed, in this case often follows the fit.

In vomiting there is generally violent expiration; and we know that during expiration the brain swells in consequence of the impeded or more retarded transmission of blood through the jugulars. This may be easily seen in the jugulars in thin persons, if we half compress the vessel by external pressure with the finger. Hence vomiting should certainly produce an accumulation of blood in the brain, and favour extravasation.

Means of avoiding Apoplexy.—To guard against heating medicines, and strong liquors of every kind, except in very small quantities; hot rooms; violent bodily exertions, as walking up hill, or quickly up stairs, especially in hot weather; full meals, particularly supper; coldness, especially of the feet; lying long in bed, and with the head low. Stooping, especially after meals; any tight bandages about the neck; and all violent passions of the mind. To observe a diet as much consisting of vegetables as the stomach will admit. To use gentle and constant exercise on foot, and by means of some mild aperient to prevent costiveness from ever remaining longer than a single day. If, notwithstanding these means, any threatenings of the disease should occur, as headach, giddiness, singing in the ears, dimness of sight, incapacity of attention, or even much flushing or heat of the cheeks, whether after eating or at any other time, six ounces of blood should immediately be

taken by cupping glasses applied to the back of the neck, or by twelve or more leeches applied to the head or temples; together with the exhibition of a brisk and strong purgative.

Cause of Paralysis.—That all cases of *Paralysis* arise from extravasation, I am by no means disposed to assert. I frequently see, in hysterical constitutions, sudden losses of feeling occur about the face, and in the hands or arms, usually on one side only, and sometimes in one side of the face and the corresponding arm together; and these attacks are so transitory, that one can hardly attribute them to that cause. So also as to diminution of voluntary motion, this in some instances is partial and speedily evanescent. In others, which are of longer continuance, the attack is extremely slight. Thus in Mrs. K., the mother of many children, (March 1807,) long labouring under various nervous affections, and uncomfortable feeling about the head, with such a sense of fulness about the stomach, and costiveness, that her complaints were all unjustly supposed owing to that cause, though the symptoms were in no degree relieved by an antacid diet, by cordials, or by purging long continued. The uneasiness was chiefly on the right side of the head, in which the carotid was enormously full and hard, while that on the other side was comparatively soft and weak; the whole left side of the body was affected with considerable weakness, though without pain, or any knowledge of a sudden paralytic attack which might have originated in extravasation.

I think it highly probable that in such cases as these, the diminution of the functions of the part originates in want of energy in the corresponding part of the brain, produced by undue impulse of the blood, or pressure from distending vessels.

Partial Paralysis.—Nov. 27, 1787, Miss D. L., aged about nineteen, fat, and rather under the middle size, has been frequently subject to transient maladies, arising from irritable nerves. On the 25th, in the evening, she was seized with a pain in her right jaw and eye, and on the same side of her head and throat, which have gradually increased. On the following day, the 26th, she perceived a want of sensation on the right side of the mouth, which now continues, and is accompanied with a paralytic weakness of the eye, cheek, and mouth, the two last of which appear somewhat swelled. She complains, that when she eats, she cannot feel her food in the right side of her mouth. The pain in the parts described is of the throbbing kind, and they are sore to the touch. The right eye is watery, but not dim. There is no disorder whatever on the other side of her face, or in any of her limbs, and she has had neither giddiness, shivering, nor sickness. She cannot readily open her mouth, and swallows with difficulty, on account of the pain. Her tongue has on it a somewhat brownish fur. Pulse quick, strong, and full. Skin cool. Feet moderately warm. Bowels open. She could not be prevailed on to submit to bleeding or blistering; and was therefore ordered to take frequently draughts of Citrate of Ammonia with Antimonial Wine, to drink

cool lemon-peel tea, and bathe her feet in tepid water.

Nov. 28. She passed a very restless night from pain in the face and back of her head, which now continues, though she sweats considerably. She has a difficulty in swallowing and speaking from stiffness in her throat and mouth; and has a slight cough and hoarseness, which have existed for some days. She complains of occasional numbness in her right arm. Tongue dry, with a whitish roughness on it. Skin cool. Pulse upwards of 100, strong, and full. No motion. Has acidity in her stomach, to which she is liable.

Mitt^{r} Sanguis è Brachio statim ad ℥viii.

℞ Infusi Sennæ ℥j.
Aquæ Menthæ sativæ ℥ss.
Tincturæ Sennæ ʒiss.
Magnesiæ ustæ ʒss. Ft Haustus, statim sumendus.

Half past six, P. M. She has had two evacuations, and her stomach is less acid. She has occasional giddiness in her head, and twitchings on the left side of her face. She is unable to shut her right eye; but no return of numbness in the right arm. The blood had no inflammatory crust. The pain immediately became better. To her saline draught, taken every six hours, were added T. Opii Camph. gtt xx. Repet. Pedil. tepid.

Nov. 29. She had two motions yesterday evening, was much refreshed by bathing her feet, perspired slightly, and slept about an hour in the night. The pain in the right side is less, and the face less drooping;

the numbness is gone, and the deglutition more easy; but she has now some throbbing pain in her left ear. She has occasional giddiness. Tongue slightly dry and furred. Skin cool. Pulse 92, full and strong. Complains of sourness in her stomach.

℞ Aquæ Menthæ Sativæ ℥iss.

Spiritûs Ammoniæ compositi gtt. xxx.

Magnesiæ ustæ ʒss. Ft. Haustus statim sumendus.

Half-past eight, P. M. She has sat up for several hours, and once or twice taken nourishment. The left ear still continues in slight pain, which also affects the fore-teeth. Other complaints are diminishing; and she speaks much better, except when her nerves are agitated, as on my entering her room, which hurries her breathing, and raises her pulse at least 20 beats in a minute.

It is not necessary to pursue this case any farther. The patient soon lost all her complaints, except some slight dropping of the right side of her mouth, which continues to this time, September 1811.

Partial Paralysis.— A married Lady, aged about thirty, of a middle size and fair complexion, who for many years had been subject to great indigestion after taking acescent or flatulent food, about the year 1805, during the first operation of a dose of Scammony, had an attack of the following kind, which has been since occasionally repeated to the present time. Since the period of the first attack she married, and has had four children, of whom the youngest is somewhat more than a year old.

After considerable uneasiness in her stomach and

bowels, and commonly after unusual costiveness, she is suddenly seized with giddiness in her head, and great dimness of sight, followed in about 20 minutes with "a glimmering before her eyes." The giddiness is sometimes attended with great sickness; then the right hand and arm lose more or less, but always a great deal, of their sensibility, and in some degree their power of motion, so that she cannot hold any thing in her hand. By degrees the numbness ascends to the shoulder, and then to the face, always, as she thinks, on the right side; immediately after which the right half of the tongue is affected in a similar way, and she loses the power of articulation. At this period, her intellects become confused, and her memory is at the same time for about half an hour so much impaired, that she cannot even remember the name of any medicine which she has just taken. On account of this want of recollection at that precise period, she is unable always to tell what part of her tongue is numbed, or whether there is any local diminution of the faculty of tasting. Soon after these occurrences, the symptoms gradually subside, leaving her with a most distracting headach, which continues the whole of the day. During this headach, if not sooner, her face is extremely hot and flushed, and her feet are very cold. The pain in her head somtimes extends itself to the occiput, but is always greatest, if not wholly, on the left side; and more or less of sleepiness continues for some days afterwards. The pulse in the radial artery is, in the commencement at least, in the natural state.

Frequently, during the beginning of the present month, at the beginning of her dinner she has felt so giddy as nearly to fall out of her chair; which she attributes to having fasted too long, and, in consequence of hunger, having eaten too fast.

For many years she has been considerably deaf in her right ear, in which there is an almost constant noise.

She was ordered to abstain from all fruit, acids, and acescent food, spirits, and fermented liquors, and to eat every species of food slowly and in less quantity than her appetite prompted; to avoid hot rooms and late hours; to take a great deal of exercise on foot, keeping her lower limbs very warm and perfectly dry; to purge occasionally with Calomel; to take twice a day Magnesia and Rhubarb in such doses as to keep her bowels gently open; to lose blood once in a week or ten days, to the amount of from four to six ounces, either from the arm, or neighbourhood of the head; and after a month employed in this system of evacuation, to use thrice a week before breakfast a shower bath, composed of about one-fifth part of boiling, and four-fifths of cold, water.

By a perseverance of some weeks in these measures, the patient, after one or two slight relapses, lost all her complaints except the deafness, and some degree of rushing noise in her right ear.

Modification of Paralysis from Affection of the Brain, relieved by Bleeding and Low Diet.—April 24, 1812. General A., aged forty-eight, about the middle size, and rather slender, an officer of great talents in the service of the E. I. C., who has resided

in India thirty-eight or thirty-nine years, and who for the greater part of his life has wholly avoided spirituous and fermented liquors; has been constantly free from all the disorders of the climate, except a fever soon after his first arrival there, and the effects of a coup de soleil. From his boyhood, however, he has been accustomed once a week to a violent pain in one or both temples, extending into the eye-balls, which has been rarely accompanied with sickness, and has come on in the morning, and gone off in the evening, after having lasted about ten hours. His bowels have been habitually open twice a day; and his digestion has always been good; notwithstanding which, and no deviation from the usual state of the alimentary canal at the time of these attacks, they have been often relieved by hot water drank in such quantities as to excite vomiting. It was on account of these headachs, which stimulating liquors always aggravated, that General A. became a drinker of water only. He has found also that the complaint has been constantly prevented, or its violence diminished, by strong bodily exercise.

Some months ago he was engaged in most active service during the reduction of the island of Java, from whence, about three months since, he brought home the dispatches; and for about a year past his headachs have been much less frequent than they used to be. In Java he had some symptoms of the usual fever of the island, which, however, was speedily removed by a strong dose of Calomel, followed by a very powerful aperient. During his voyage home he

enjoyed tolerable health; but soon after his arrival in England he began to feel a kind of dulness about his head, accompanied at times with slight giddiness. About three weeks ago, while walking, he was seized with a sudden obfuscation of sight, which continued for about half an hour, without any marked indisposition of any other kind, and went off without any assignable cause or remedy. Since that time, however, he has often found, that when he has felt a disposition to make water, he has been obliged to evacuate it immediately, otherwise he should not be able to retain it. Yesterday, about three o'clock in the afternoon, while on his journey from London, and walking in the streets of Reading, he found his lower limbs affected with a sudden sense of weight, as if he could with difficulty drag them on; and soon afterwards he experienced some failure of power in the muscles of the root of the tongue, in consequence of which his speech became thick and inarticulate. His ability to swallow was also in some degree impaired, so that on first attempting to drink, liquids were apt to excite coughing, by "going the wrong "way." These symptoms were accompanied with no other indisposition, except that sensation of dulness about the head before described. They now continue. There is no insensibility in the tongue, or incapacity of tasting. Gen. A. is able to protrude it straight forwards, and has no dropping or numbness of the face or arms, and no disposition to deafness. The eyes are slightly red, and the pupils unduly contracted. Tongue rather white. Face somewhat

flushed. Pulse 96, and rather hard in the radial artery; in the carotids extremely hard and full. Bowels not open to-day. He has never had gout; and has once only had piles, which was in a slight degree, many years ago. Appetite and sleep good.

℞ Hydragyri submuriatis gr. iij.
Extracti Colocynthidis compos. gr. ij. M. ut ft. Pilula, h. s. sumenda.

℞ Magnesiæ Sulphatis ʒiij.
Mannæ ʒiss.
Infusi Rosæ ʒxiv. Solve et adde
Tinct. Sennæ ʒij.
Acidi Sulphurici diluti gutt. vj. Ft. Haustus cras primo mane sumendus.

Gen. A. was cupped on the 25th to sixteen ounces, and again on the 28th to twelve or fourteen ounces. On the 30th he was bled (ad ℥xij. vel xiv.) from the arm. His bowels had been kept open by Cathartic Extract and Calomel, and he had taken effervescing saline draughts.

May 2. He immediately felt himself lighter for the bleeding. The blood is more or less covered with a concave crust of coagulated lymph, with corrugated edges, and is unduly tenacious. His head is better; he has less difficulty of articulation, and of swallowing; his tongue is moist and clean; and he is altogether free from complaint. Two or three motions daily. Pulse 72, and fuller.

Pergat sine Hydrargyro.

Let him abstain from all animal food, except milk, and occasionally some fish; and continue his absti-

nence from spirits and fermented liquors, and take constant exercise in walking.

May 16. He has persevered in the plan above directed, and has had each day two or three motions. These two last nights he has waked about two o'clock, and continued very restless, with a quick succession of disagreeable thoughts. He is free from headach and giddiness; can walk two or three miles with little fatigue; and improves in speaking, but has still some hitch in swallowing, and great mental depression. Tongue tolerably clean and moist. Pulse 84, and hard, especially in the carotids.

Detrahantur sanguinis ℥xij. ope cucurbitularum.

Pergat in usu medicaminum.

May 20. Having continued free from headach, with open bowels, and bad nights, with cold feet, he was desired on the 18th to abstain from medicine, but to bathe his feet and legs each night for ten minutes in water of about 98 degrees of heat. He did so, but for the two last nights has been so much more agitated as not to have slept at all. His bowels to-day have not been open; and his mind continues greatly depressed, though he regularly takes long walks with no extraordinary fatigue. Pulse about 84, and both in the radial and carotid arteries very strong and full.

℞ Balsami Asiatici (Black Drop vulgò dicti) gutt. viii.

Mist. Amygd. ʒx. Ft. Haustus singulis noctibus h. s. s.

Pergat in usu pilularum p. r. n.

From this dose of opium, occasionally increased to twelve drops, he obtained relief from the agitation with which he had been before affected.

Thus he proceeded, regaining strength and general health, till the latter end of June; when there occurred an obstinate fit of costiveness, accompanied with pain and weight in his head, but no aggravation, or rather return, of the paralytic affections. In order to relieve this costiveness, aperients of three or four times the usual strength were necessary, and after many days succeeded, leaving him in the same state as before that attack. This state was, little or no perceptible thickness of speech or difficulty of swallowing, a perfect use of his mental powers, less of headach than he had been for many years accustomed to feel, and an ability to walk some miles at once, with no other inconvenience than what he described as an occasional dropping of his toes.

Under these circumstances my attendance on Gen. A. ceased. He experienced one or more relapses, under other care; and died, I know not how affected, in the month of December or January following.

Miscellaneous Remarks.—*On the Causes of Hemiplegia.*—In some instances this affection suddenly takes place, and continues, without any recollection of previous, concomitant, or subsequent affection of the head. This was the case in Mr. H., surgeon, a young man at Lugo, during the late campaign in Spain. But then the disease took place during sleep; besides which the previous affection of

the head may have been so short as not to be recollected. In the case of Mr. H the internal use of the Bath Water, though in a very small quantity, brought on a vertiginous affection, though in a slight degree, which shews a disposition to a morbid state of the brain. He had a second attack, according to his own account, after having recovered from the first, from having had five pounds of blood taken away. If he was recovered, why did they bleed him? It is much more likely that they did so because the disease threatened him, and the remedy did not prevent the disease.

Symptoms of Hemiplegia.—These are often complicated with those of convulsion or epilepsy, from impulse of blood at the moment of extravasation. Thus Dr. H. waked in the night with a feeling of a spasm or electrical shock in his leg and foot. This was also immediately afterwards felt in the hand and arm, and on soon after trying both, he found both motionless, though with no diminution of sensibility.

Under certain states of *Hemiplegia*, a patient shall be very restless, but not able to say where his pain is, which proves the seat to be in the brain.

Uneasy Dreams, Forerunners of Paralysis.—In Mr. T., August 1810, they occurred in a very frightful shape, for many preceding weeks.

In Mr. G. and others, with *hemiplegia*, some of whom have had little or no motion in the affected arm, the affection of yawning without any voluntary effort bends the fore-arm some inches, and in some degree shuts the fingers, and that whether in bed or up.

I have seen cases in which a blow on the head produced nervous affections, crying, &c. like hemiplegia.

Difference of Effects between small and large Bleeding in Hemiplegia.—When Dr. H., who was above seventy years of age, was seized with hemiplegia, in which he totally lost the voluntary power of his arm and leg, I ordered him to be cupped. This was done only a few hours after the seizure. While the operation was performing, when only four ounces of blood had flowed, the power of voluntary motion in his limbs returned; but again vanished by the time ten ounces had been taken away.

Convulsions and Paralysis from Dentition.—Master C., aged two years and three quarters, fourteen months ago, during dentition, was seized with violent convulsions, accompanied with foaming at the mouth, which continued for seventeen hours, with perfect insensibility. On coming a little to himself, he was found to be paralytic on the whole of the right side, from his face downwards. He remained, however, insensible for a fortnight, and never spoke for three months afterwards. He has now frequent returns of slight attacks; which consist only in drawing his eyes and twitching of his limbs. He has tolerably regained the use of his leg, but very imperfectly that of his hand; and his mouth on the right side still droops. He is rather fat, and his appetite is good. He has used the pump and warm bath with some apparent benefit.

Hemiplegia from Dentition.—Master F., a stout fat boy, aged nearly two years, during dentition was

seized with epilepsy, which was followed by hemiplegia of the left side. When I saw him many months after, he had a very imperfect motion of that side.

Pain in the Paralytic Side.—In Mr. G., there is a great deal all down the shoulder, arm, and hand, within and without; the pulse 84, stronger in that than in the left, and the hand and arm hotter; and great pulsation of the carotid, with restlessness and general irritation; also pain in the course of the right sciatic nerve. Quere, is this from the affection of nerves propagated from the brain? or does it depend on an irritation of the several nerves from the distention of the blood-vessels of the parts pained? The latter would be analogous to the cause of pain in inflammatory affections, by irritation of the nerves of the parts. In hydrocephalus, the irritation of brain produces pains in the course of the nerves.

Cases of Hemiplegia Sinistra.*

Hemiplegia from an Impression on the Organ of Hearing, probably through Palpitation of the Heart.—John L., a chairman, aged fifty-two, was carrying a lady in a chair on the 15th of March, 1781, in order to see the illuminations in Bath, on account

* The following Cases of Hemiplegia are here divided into Sinistra and Dextra, in consequence of an inquiry, into which Dr. Parry seems to have entered in the year 1813, as to the relative frequency of each of these attacks, and the course of symptoms connected with the affection of either side. A large collection of his cases is, however, still omitted as imperfectly prepared for publication. The present cases are published, to assist those who may be desirous of prosecuting an important inquiry.—Ed.

of the taking of St. Eustatia by Sir George Rodney, when a gun deeply loaded was fired close by his ear. He staggered a few steps, and then fell down senseless. In this state he remained about ten minutes, and when he came a little to himself, was in part deprived of the use of the left arm and leg, though their sensibility remained perfect. These symptoms continued when I saw him on the 22d. His face was flushed, he had some confusion in his head, and when he stooped forwards was so giddy as to be scarcely able to stand. His pulse was slow and full.

He was ordered to have eight ounces of blood taken from his arm, a large blister to the nape of his neck, and a strong Aloëtic purgative.

The blister discharged well; but the purgative having failed to operate, was ordered to be given in double the dose, and to be repeated two days after.

The first dose of the purgative produced two motions, and the second three. The blister was kept discharging, and at the end of a week he was nearly free from complaint, and called on me no more.

Hemiplegia Sinistra, without Headach or Vertigo. —Mr. G., aged fifty-nine, a farmer, a stout and rather corpulent man, a full but not what is called an intemperate liver, was in the month of June seized with hemiplegia of the left side, without any previous headach or vertigo, or consequent sickness, but with some degree of confusion in his head. The arm was first affected, and half an hour afterwards the leg; and both parts suffered some diminution of sensibility as well as of voluntary motion; and the attack was

succeeded on the following day by convulsive motions of the abdominal muscles. When he came to Bath on the 20th of October, he had nearly regained the power of motion, but not sensation.

On the evening of the 9th of November he had another attack on the same side, without the least affection of the head, sickness, or any species of convulsion. But he had a very restless night, and made nearly a large chamber-pot full of very pale, clear urine.

On the following day, his pulse was between 90 and 100, and full; his head hot; his tongue dry and parched, and his urine of the natural colour.

Hemiplegia Sinistra.—Mr. T., aged sixty-two, Nov. 3d, 1808.—A thin small man, for many years a most active farmer, of late leading a more sedentary and studious life; of acute mind, and very considerable mental acquirements obtained chiefly late in life; a very temperate liver, eating no suppers; for two or three weeks was in the country where he was out riding hard in coursing, and occupied in all field sports, during which he become more hungry than usual, eat meat thrice a day, especially at supper, and drank more than he was accustomed to drink. Found no inconvenience at the time from this change of life; but on Monday morning, returning to Bath on a jaded horse, which made it necessary for him to use his whip and spur pretty freely, he was considerably heated and tired. Soon after he came home, he was seized with violent giddiness of his head, accompanied with sickness and vomiting. After some hours, these symptoms were succeeded by hemiplegia

of the left side, which gradually increased till this afternoon, when it has become stationary. Pulse now, 5 P. M. soft, and about 62 in a minute. No headach, nor sickness, or giddiness, since the first day. A motion yesterday, none to-day. No numbness of the side; but difficulty of motion. Intellects and speech not affected. Pulsation of the carotids now moderate.

This case shews that full living and hard exercise dispose to extravasation.

Hemiplegia, chiefly, to all appearance, of the Secreting Arteries of the Left Side.—March 19, 1814, Miss F., aged twenty-eight, tall, thin, and with a somewhat florid complexion, thirteen or fourteen years ago, when at school, was rather suddenly seized with some degree of hemiplegia of the left side, accompanied with transient confusion of intellects. The exact state of the original symptoms it is now impossible to ascertain. It is certain, however, that she has at various times been affected with headachs, and that from the period of the attack the left side of the face began to grow more thin than the right, and the eye to become less prominent, and therefore to appearance smaller. That, however, which is most extraordinary is, that, from the same period, her hair on the upper part of the left side of her head, which was before of a dark brown colour, began to grow white, and is now so to a considerable extent, without the mixture of a single brown hair. On the same side, after an intermediate space of the natural colour, there is also a single lock, perfectly white, growing at the very lowest margin of the scalp, just on the upper

part of the neck. Her eye and face continue in the state already described ; and when she protrudes her tongue, it turns to the left ; but there is no dropping of the eyelids, or corner of the mouth, nor any weakness or numbness of the limbs on the affected side. Pulse 84, and of moderate strength in the radial arteries ; but preternaturally full and strong in the carotids. Appetite good. Feet moderately warm. Bowels usually open, but of late costive. No dyspeptic symptoms. Menses rarely occurring oftener than once in six weeks or two months. Her headachs were very much aggravated by the use of wine, which she took by medical advice ; but have nearly ceased since she has reduced its quantity to one glass daily.

No ulceration of the skin of the head has ever taken place from blistering, or any other cause.

It is necessary to remark that this lady's whole family, many of whom I have attended, have been subject to excessive fulness of the vessels of the brain, and the various diseases arising from that source.

℞ Pulveris Jacobi gr. viii.
Aloës Barbadensis gr. vi.
Syrupi q. s. sit. Ft. Pilulæ viij. æquales. Sumᵗ unam, mane, meridie, et horâ somni quotidie.

March 26. This young Lady's parents inform me that at the commencement of the attack there was certainly some numbness of the left side of her face, and some weakness of the left arm. These symptoms do not now exist. A little deafness of the left ear has, however, continued ever since the attack. She

feels occasional uneasy pulsations in her head when lying down ; and these are so aggravated when she is on her left side, that she cannot lie on it. The tongue is not only protruded to the left, but is evidently thinner on that side than on the other. The white patch of her hair is precisely bounded by the median line of the head ; on the right of which there is not a single white hair. There are also a few white hairs mingled with the brown on the forehead and in the eyebrow on the left side.

Hemiplegia Sinistra.—Mrs. T., aged about fifty, was from an early period of life subject to sick headachs ; in which the affection of the head, which was pain, occasionally accompanied with vertigo, was always prior to sickness and vomiting, which usually followed the disorder of the head. Although, however, she did not ever suffer any malady of the stomach from peculiar ingesta, or indeed from any other cause but these attacks in the head, the complaint was always supposed to originate in the stomach, and various remedies were, under that view, ineffectually employed. The most beneficial of all was bodily exercise.

In the month of September 1814, nearly two years after the cessation of the menses, she began to suffer unusually vehement fits of her accustomed malady, which an ingenious surgeon attributed to excessive determination to the head, and proposed, but without success, to attempt relieving by local and general blood-letting.

At length, a very severe attack of the pain occurred

on the right side of the head, and was soon followed by hemiplegia on the left side of the body and limbs.

Hemiplegia Sinistra.—Thursday July 18, 1816. Eliza J., aged twenty-four, small, thin, unaccustomed to headachs or hysterical affections, nearly two years married, having had one child eight months ago, but now regular, leading a sedentary life, on the morning of the 15th ult. found a numbness of the left hand up to the wrist. This had yesterday extended itself, on the same side, all up the arm through the shoulder to the left side of the neck, but never affected the face or head. Below it had reached to the upper part of the thigh, and all round the hip, and had included the left mamma and the whole of the side to the back bone. The power of motion was perfect, but there was a total want of sensation. To-day the numbness has left the neck, and there is a little sensibility about the mamma, but a slight degree of the complaint has proceeded down the thighs about half way to the knee, below which it has never proceeded. Right side not at all affected. Tongue in the natural state, with regard to motion, general sensibility and power of taste. Hearing and seeing as usual. Bowels open once or twice a day. Catamenia a month ago this day.

This complaint was not preceded by any sensible disease of the head; but on the 15th in the afternoon she experienced a sensation as if she should fall down, which was of short duration, but recurred at various times till yesterday, when, by my direction, eight or nine ounces of blood were taken from the arm. Since

that time she has suffered no uncomfortable feelings in her head. Appetite and digestion good. Her sleep last night was greatly disturbed by an aching pain in her left leg and thigh. Urine high coloured. Tongue somewhat white. Pulse 72, and soft.

No obtuse pressure, though strong, produces any sensation in her hand; but a needle being yesterday accidentally run into the fore-finger produced some slight smarting. The two middle fingers are rather disposed to automatic contraction, and I find that tickling the palm of the hand, though not at all felt, brings on, occasionally, a movement, which is lateral in the fore-finger, and that of gradual contraction in the two middle ones.—Mitt^{r} Sanguis è Brachio iterum ad ℥viij.

July 19. The blood shewed some separation of fibrine on its surface. No faintness from the operation. No pain or other indisposition in the head. Bowels once open to-day. Hand, upper part of the thigh on the inside, and the side of the belly, continue as before, and the numbness has extended itself to the toes; but all the other parts are somewhat better. Tongue clean. Pulse 72, and rather hard. That in both carotids strong and full.—Sumat Haustum ex Inf. Sennæ, &c.

July 20. The medicine operated four times freely, and without sickness. Before the first motion, her head ached very much, but was immediately relieved by the evacuation, and continues well. The numbness continues in her hand, and from the groin all down the inside of the thigh, which seems utterly

insensible; and the leg below feels as if it was asleep. The trunk of the body from below the mamma upwards is become perfectly sensible. Pulse 80, and rather hard.—Rep^{r} Haustus.

July 21. Seven or eight strong motions from the draught. Numbness now chiefly confined to the inside of the thigh on the upper part, and the left side of the pubes; together with the hand. Head well. Pulse 72, and more soft.

℞ Misturæ Amygd. ℥vi.
Scillæ recentis gr. xxiv.
Potassæ Nitratis ʒss.
Sacchari puriss. ʒj. M. Sum^{t} coch. duo ampla ter die.

July 26. Bowels open once a day. Pulse 84; equally strong in both wrists. Thermometer in left hand 84,6. In right 87,1. The feeling in the left hand is very much improved, though not wholly restored. In every other part natural.—Repet^{r} haustus matutinus.

July 30. Quite well in every respect. Menses adsunt. Thermometer in her right hand 91,1. In the left, which has perfectly recovered its sensibility, 89,5.

In this case there was never any other diminution of the power of motion in the affected side, except that she was not conscious, by sensation, of the due regulation of her movements.

Hemiplegia Sinistra.—April 26, 1813. Sarah L., aged forty-two, was seized ten months ago with apoplexy and hemiplegia of her left side. Her speech was long extremely defective. She now speaks

tolerably well, and has much recovered the use of the affected limbs.

William D., aged forty-two, was seized fifteen months ago with apoplexy and hemiplegia of the left side. His intellects are good, and he uses the whole side tolerably well.

Edward S., aged fifty-five, was seven years ago suddenly struck with apoplexy, and palsy of the left side. His intellects are good, and the use of the side considerably restored.

April 26, 1813. Charles S., aged fifty-nine, was struck with apoplexy and palsy of the left side a year ago. He has not recovered any power of voluntary motion in the side, which is also affected with diminution of sensibility.

May 1813. Mr. M., a stout man, aged sixty-nine, not subject to headach or gout, was seized, at Christmas 1811, with a sudden failure of voluntary motion of his left side, without diminution of sensibility, speech, or mental powers. A month after, the gout seized most of the joints of the affected side. He can now walk in a certain degree, but has little use of the upper extremity; and the mouth droops a little to the left.

Mr. D. Right eye a good deal red for these three months. For a day or two violent headach, and this morning, after sudden loss of senses, seized with hemiplegia sinistra. Leeches put on the right side to-day bled a great deal, and relieved both inflammation of eye and headach.

Hemiplegia Tremens, (Sinistra.)—May 1813.

Sir William M., aged upwards of seventy, who has been much in the military service in hot climates, and lived very freely, but took a great deal of bodily exercise, about four years ago, after a long walk, fell, and found himself unable to rise, in consequence of some paralytic affection of his limbs. After some time, however, he recovered their use; but a few months afterwards was seized with a sudden stupor, heat and flushing of the face, and laborious respiration. From that time he has had a constant weakness in the whole of the left side, without any diminution of sensibility. He rather drags the right leg, and both the leg and hand are affected with tremors when not perfectly at rest, or when employed in long continued or moderate exertions. The hand affected is also subject to be livid and cold.

Since the first attack of the latter kind, he has had occasional relapses, and is always heavy and dull after dinner, in which he indulges himself too much. His limbs remain as before.

Hemiplegia Sinistra.—June 8, 1813. Mrs. P., aged about forty, was in March 1812, suddenly seized with hemiplegia of the left side, accompanied with a short loss of her senses. These, however, soon returned; but there was a great deficiency of the power of speech and swallowing, together with a considerable diminution of the sensibility of the affected side. The faculties of speech and swallowing were greatly relieved in a week.

The sensibility of the side is now perfectly restored. She can walk with the assistance of a stick, and can

even, though with difficulty, lift up her arm, but cannot use her hand. She speaks and swallows well; but when she attempts to put out her tongue, it trembles very much, and strongly inclines to the left side. There seems to be some slowness of comprehension, but not more than one often sees in persons uneducated, and free from disease.

Hemiplegia Sinistra.—May 23d, 1813. Mr. B., aged ———, was seized with apoplexy, followed by hemiplegia of the left side, on the 11th of December, 1812. When he became conscious of objects about him, he had no deficiency of sight, but the side affected had lost its sensibility and voluntary motion. His memory, also, was greatly impaired, but recovered at the end of about three weeks. After a longer period the sensibility was entirely restored, and he began to have some power of moving the arm and leg, which however he again lost about the month of ———, and ever since that period he has had no voluntary power over his arm, and very little over his leg and foot. His mouth droops on the affected side, but he cannot put his tongue in a straight direction. He has no pain or vertiginous sensation in his head, but an uneasy feeling which he calls queerness; and his nights are devoid of refreshing sleep. Pulse in the radial artery quick and hard. In the carotids extremely hard and strong.

Previously to the attack he was subject to blind piles, but has not had them since.

Hemiplegia Sinistra.—June 14, 1813. Mr. L., aged about fifty, was taken suddenly ill in the night

of June 12, 1812, so as to fall out of bed, with slight hemiplegia of the left side, attended with a short loss of sense. In consequence of being largely blooded, he recovered a little that day, so as to walk about, the next afternoon he was again seized with hemiplegia of the same side, which soon increased so as utterly to disable it. His limbs, especially the leg, are much better, so that he is able to walk, in a limping manner, several miles. He is, however, subject to frequent and violent headachs, and his memory is greatly impaired.

Hemiplegia Sinistra.—July 16, 1813. John H., aged forty, who had suffered a slight paralytic stroke on the left side six years ago, a little before last Christmas was suddenly, in the night, seized with hemiplegia sinistra. His senses and speech were for a time lost; but when he began to recover, there was no diminution of sensibility any where but on the side of the face. He is still affected with headach and giddiness, his left eye and ear are deficient in their functions, and the left pupil is more dilated and less sensible than the right. His mouth falls to the left, and the tongue when protruded turns to the right. Speech now perfect, and power over the limbs much recovered.

M. N., aged thirty-seven, was four years ago suddenly seized, in the night, with hemiplegia sinistra and apoplexy, followed by no diminution of sensation in his limbs, or of the faculties of hearing or seeing. Arm much as it was, having little voluntary motion, but subject to be suddenly raised by the

action of yawning, after which it gradually descends. Leg much improved. Tongue straight. Mouth slightly falling on the left side.

H. R., aged thirty-nine, was in December last, about eleven P. M. taken with a somewhat gradual hemiplegia of the left side, with considerable previous vertigo and sickness, but without loss of senses, or any diminution of feeling in the affected side. Tongue, mouth, and eyes, natural. The use of his limbs is considerably restored.

W. B., aged sixty-three, about the month of Dec. last, was suddenly between ten and eleven P. M. seized with giddiness and hemiplegia of the right side, without any general or topical loss of sense. His mouth and tongue have been little affected. He has little power over his limbs.

J. H., aged twenty-five, was seized suddenly in the night, in the month of February 1812, with hemiplegia of the left side, diminution of the power of speech, and of the sensibility of the affected side. His mouth is even. He protrudes the tongue straightly, and the insensibility of the side is removed.

T. V., aged twenty-five, more than two years ago became gradually affected with hemiplegia of the left side, without loss of senses. At this time the lower limbs on both sides are very weak; but his arms are little affected. The lower limbs are also much numbed.

July 21, 1813. Mrs. H., aged about fifty, was seized a few days ago with hemiplegia of the left side, attended with diminution of the mental faculties, which has very much increased, so that to-day she

begins not to answer questions, though her eyes are open, and she seems to look round the room. The pupils are sufficiently contracted. Urine and stools passed involuntarily. She died on the 25th.

Hemiplegia Sinistra.—July 27, 1813. Mr. R., aged fifty-two, was seized about nine o'clock in the evening of the 13th of December last, with loss of motion in the left side. On the following day he lost his speech, and his senses were greatly impaired, though consciousness was not entirely gone. When he became better, there was no diminution of sensibility on the affected side. Now he has little appearance of the disease, speaks well, puts out his tongue straight forwards, and his mouth does not drop to the left.

August 2, 1813. M. R., aged thirty-eight, has had five attacks of hemiplegia of the left side, the latter of which was a month ago, about ten at night, and accompanied with a short privation of his senses. His head is tolerably well, and his intellects are clear. He retains his urine and stools with difficulty. The sensation in his left side is perfect, but the power of motion very defective. He cannot distinguish objects with his left eye, the pupil of which is considerably dilated, and little affected by light. The sight of the other eye is also somewhat impaired, and deficient in sensibility to light, but in a much less degree than of the left. Mouth and tongue not affected.

J. M., aged fifty, a worker in tin and lead, was suddenly seized, at nine in the morning of the 1st of January last, with hemiplegia of the left side, un-

accompanied with any loss of sense. He is much improved in his limbs, and his sensation is perfect. His tongue and mouth are not affected. He never had any symptom of colic.

August 6, 1813, two P. M. Mr. G., aged fifty, master of a public-house, and an extremely strong man, living freely, but not to ebriety, has been long subject to violent attacks of acute rheumatism, in which he has experienced no relief from large evacuations of blood, accompanied with copious purging.

This morning about nine o'clock he was suddenly seized with hemiplegia of the left side, in which he totally lost its use, and was affected with some degree of mental alienation or delirium. He has been largely blooded (ad ℥xxx), and is now considerably better than he was; has a good deal of motion, and no impairment of sensibility, in his arm and leg, and his mouth, tongue, and speech are not affected. There is, however, some slight slowness of intellect, but no delirium. He has taken purging medicine, which has tolerably well operated. The blood has a very thick tough crust of lymph. Pulse somewhat quicker than natural. In the evening he was again blooded (ad ℥x), and the blood, though tough, has no lymphatic crust. He has had sleep, and is in every respect much better, so as to be desirous of going down stairs.

The next day he was so well in his head and limbs, that there was no occasion for my attendance.

Hemiplegia Sinistra.—August 21, 1813. Mrs. W., aged seventy-three, has had two attacks of slight

hemiplegia of the left side without any loss of senses, but some affection of the organ of speech so as to impair her articulation. The first of these attacks was eight or nine years ago, and the second three and a half. Her mouth slightly fell on the left side. She is much recovered from these attacks, her sight and senses being good, and her tongue straightly protruded; but has now been for a year and a half confined to her bed from an accident to her right hip, and has often been affected with fits of gall-stones.

Sept. 8, 1813. Mrs. H., aged eighty-one, was a fortnight ago suddenly seized, about seven o'clock in the morning, with slight hemiplegia of the left side. There were no symptoms of apoplexy. She has very much recovered the use of the side. Her tongue and mouth are not affected; but she is very restless, talks incessantly, and sometimes almost incoherently, is very averse to the use of remedies, and is constantly desirous of taking long walks, and attempting various other acts, of which she is not capable. Pulse in the radial and carotid arteries quick, and very full and strong.

Mr. P., aged between sixty and seventy, long accustomed to pain about the occiput, for which, though he used occasional remedies, he could never be prevailed on to employ any uniform course of regimen, was on the —— of September suddenly seized with hemiplegia of the left side. I was not able to ascertain whether it was accompanied with apoplectic symptoms. He now talks and swallows well, is impatient to go to his home, and has little farther sign

of mental derangement, except that he has been slightly wandering at night, and is not always able to distinguish persons whom he does not intimately know, and to whom he speaks. His mouth is not dropped.

HEMIPLEGIA DEXTRA:

Eye affected, with the Muscles of the same side, in Hemiplegia.—Mr. H., aged fifty-eight, a fat man, with large head and short neck, who had lived rather freely, but not to drunkenness, had scarcely ever had headach, and never piles, gout, or any complaints in his stomach, was seized about seven o'clock in the morning with sudden loss of motion and some diminution of feeling in his right side, together with total loss of voice, and almost entire privation of sight in his right eye. He was constitutionally costive, but neither before, during, nor after the attack, till the time when he consulted me, had he any sickness in his stomach, or pain, weight, fulness, noise, or giddiness in his head.

Hemiplegia Dextra.—Mr. R., aged sixty-five, of middle size, and rather large and full head, was in June last, about seven in the morning, without any previous indisposition, seized with a sort of tingling in the right side of the face, immediately proceeding to the hand and foot, accompanied with some weakness of the muscles on the affected side, together with giddiness; all of which soon went off.

About six weeks ago, he had a similar attack in the morning about eight, without any disorder subsequently to the former attack; which again soon got well after he was cupped.

Eight days after this, at five o'clock in the afternoon, he had a third attack, as before, on the right side; and there now remains some insensibility in the face, and both extremities, up to the shoulder and hip, which continue weak in a slight degree. There is also some incapacity of attention to reading and writing, and some slight difficulty of speaking, but not in swallowing. He can, however, cast up arithmetical accounts. His memory is also perhaps in some degree impaired; and he cannot now recollect whether the second attack was not on the left side. The mouth droops in that direction; but he puts out his tongue straight, and his sight is not affected by the malady.

Mr. J., aged forty-eight, short and of square habit, but rather thin, living a sedentary life, had hemiplegia of the right side twenty-seven years ago; but had nearly recovered, when about six weeks ago, being on the Grand Jury at the Old Bailey, sitting a long while in very cold weather, near two doors, which were open, and very much chilled, he was seized with a new attack in the same leg only, without any affection either of the arm, face, or head. His health at the same time was perfectly good. Pulse in his wrist soft, in the carotid strong and hard. Feet warm. Habit costive. The great defect seems to be in the power of raising the foot and toes in walking.

Miss T., aged six years and three quarters, was seized on Friday, Sept. 9, at eleven in the forenoon, with a numbness on the whole of the right side, unaccompanied with any difficulty of moving the limbs,

but in some degree affecting her speech. It was unattended with vomiting, and in a short time disappeared. The next afternoon, about five, there was a similar attack, though in a slighter degree; attended with headach, sickness, flushing in her face, and fever. For several previous months she had a craving appetite, with occasional headach and sickness.

Wm. C., aged thirty-eight, after violent pain in the head, three years ago suffered hemiplegia of his right side without any loss of his senses. His speech is imperfect; but his limbs have nearly regained their power.

Col. B., aged between seventy and eighty, has been long affected with hemiplegia of the right side. The arm is useless, and both it and the hand rigidly contracted by the flexor muscles. He walks with great difficulty.

M. W., aged twenty-two, was suddenly seized in the night, about November 1811, with loss of senses, and hemiplegia of the right side. Her arm and foot are contracted, and little obedient to the will. Sensation good. Her mouth droops on the right side, and her tongue, when protruded, is curved to the same side. The pupil of the right eye is somewhat dilated, and from the commencement of the attack she has seen very imperfectly with it.

Mr. P., on the 11th of Jan. 1808, in Teneriffe, was seized with hemiplegia dextra. He remained at first insensible for two days; afterwards for a considerable time vomited, or strained to vomit, when he lay on his back or left side. Now for several weeks

has occasional difficulty of breathing, with palpitation; which always come on him when he first lies down, especially if he does not lie on his right side. Urine natural as to colour and quantity. Pulsation of the carotids enormously strong and hard. Some headach, though rarely.

Miss F., April 1809, aged about thirty, fat, and rather large, was about two months ago, after considerable pain in the occiput, seized with stiffness and numbness of the right side from her face down to the foot. At the same time her left eye was drawn inwards. This affection of the eye still continues, when she looks at an object straight before her, with both eyes open, but not if she looks a little to the right. If, however, she shuts the right eye, looking immediately before her, then the left eye is properly directed. She cannot however turn it at all more to the left. The least quantity of wine affects her head. She is apt to be giddy when she covers the right eye.

In this case there is palsy on the right side of the face and body, and of the abductor muscle on the other side, in which the abductor would only act so as to bring the axis of the eye straight, but not go beyond that line outwards.

Effects of Pregnancy.—Hemiplegia Dextra.—April 20, 1810, Mrs. T., aged between thirty and forty, wife of Vice-Adm. T., in the sixth month of a former pregnancy, was seized with hemiplegia and considerable affection of the head; immediately after which she miscarried. Then intervened great anxiety of mind, during three years absence of the Admiral

in his professional duty. About the latter end of February, in the fourth month of menstrual obstruction, supposed to arise from pregnancy, she was again seized with hemiplegia of the right side, and loss of memory, especially for words; which she has now regained very imperfectly. Her side is weaker than it should be, and she says she has no sensation in it.

Hemiplegia Dextra.—April 7, 1813. The Hon. Mrs. V., aged upwards of seventy, whom I had more than once attended with vertiginous affections, accompanied with vomiting, went to bed in good health at a quarter before eleven last night, and at two in the morning was seized with headach, almost immediately followed by apoplexy and hemiplegia of the right side. Half an hour after, I saw her. She was breathing stertorously, with a very strong full pulse. The right pupil was more dilated than the left, and the eyelid, when raised, remained in that position. She had been copiously blooded before I reached her. Local bleeding and blisters were employed, with stimulant glysters. She died four hours and a half from the first attack.

Master P., aged thirteen, never subject to headachs or bleeding at the nose, but affected with an abscess in the right ear some months before, after a great deal of exertion in walking, and playing at cricket, in the month of September last, was suddenly seized with apoplexy without convulsions, and loss of motion in the right side. The sensibility was never affected. As he recovered, he was found to be defective in speech and memory, and his mouth was

a little drawn to the right. There was also considerable difficulty in swallowing.

These circumstances all continue in a certain degree to the present time, May 23, 1813; and he has occasional twitching and contractions about his mouth and various parts of the face, such as often occur in chorea.

August 23, 1813. The Rev. A. B., aged fifty-one, chaplain of a man of war, a very stout full man, who has lived freely, but enjoyed good health, was suddenly seized, three months ago, during the night, without consciousness, with hemiplegia of the right side, and delirium, accompanied with great diminution of the power of utterance and swallowing. The sensibility of the right side has not been impaired. The power of motion is considerably returned, so that he can take a long journey on horseback, and walk, though lamely, without assistance. The mouth droops to the right, and the tongue turns a little that way. The articulation and swallowing are nearly restored. Sight and hearing perfect. No headach now.

Partial Hemiplegia (Dextra).—August 18, 1813. Mr. F., aged sixty-four, formerly accustomed to a good deal of exercise, but to little of late, enjoying comfortable health in general, but with occasional gout, though not for these three years past, was about the middle of March last, at mid-day, without any previous indisposition but slight languor, suddenly seized with incapacity of utterance, apparently from inability to move the organs of speech, attended with deadness and loss of voluntary motion in the right

hand and arm, but no other indisposition. All these symptoms disappeared after two or three minutes, and he returned to his former health. On the 13th of May he was attacked at breakfast exactly in the same way; with effects similar to the former. A similar attack occurred about a week after in London, soon after breakfast.

About six weeks ago, he was unusually sleepy in the evening, and the following day, at dinner time, his mouth was perceived to drop on the left side, and he became unable to shut his eye from having no power to raise his lower eyelid. There was no numbness of the side of the face, or difficulty of swallowing; nor was the arm or leg of the same side affected, or his sight at all impaired. These symptoms continue, and the left eyebrow and upper eyelid drop. Previously to this attack there was no pain any where on the outside of the face or head. Tongue and throat unaffected, and taste perfect. Bowels usually open. Appetite of late bad. Sleep better than before the attacks. No dyspepsia. Three years and a half ago, he had inflammatory gout in his foot for about a week, and again a year ago slightly in that foot and one hand. When he was a young man, he used to bleed a good deal at the nose, and afterwards to have piles; but neither for these twenty years. Pulse 96, strong and hard in all the arteries. Feet usually warm.

Mitt^{r} Sanguis ad ℥x.

August 19. He bore the bleeding well; and the blood, which flowed with tolerable freedom, shews no

separation of lymph. No stool yesterday; three today from some opening pills of Extractum Colocynthidis compositum and Submuriate of Quicksilver. Pulse 68, and hard.

I recommended that Mr. F. should abstain from wine and other strong liquors, eat animal food very sparingly, use every day as much exercise in walking as his strength would permit, and continue for a great length of time the prescribed aperient of Barbadoes Aloës once or twice a day.

According to the report of the medical gentleman who attended him when he left Bath, Mr. F. persevered in these measures; and by the end of January, 1814, his mouth and eye had nearly regained their natural appearance, his health was otherwise remarkably good, and no malady existed but some slight failure of memory.

Hemiplegia Dextra.—Sept. 3, 1813. T. C., aged forty-five, was suddenly seized, about seven in the morning of the 9th of August, with hemiplegia of the right side, preceded by headach, and accompanied with vomiting. He did not lose his senses, or the sensibility of the affected side. His mouth falls on the right, but he shuts his eye and sees well, and puts out his tongue nearly straight. He walks tolerably, but has little use of the right hand. Pulse slow and weak; rather strongest in the right wrist.

Mr. C., about fifty years of age, of a somewhat full habit, but on the whole a temperate liver, was suddenly seized during the night with a hemiplegia of his right side, without any previous symptom of

cerebral affection. The power of motion in the whole side was considerably but not wholly impaired, and it was remarkable that the leg and thigh were more affected than the arm and hand. The sensibility was at the same time so much diminished, that he could scarcely feel any thing from the fingers up to the shoulder, or from the foot up to the hip. In about three weeks the sensibility began to increase, and the motion of his arm was so much improved, that he could raise it above his head, while at the same time he had no power of moving his toes. At this time, if he stretched out both his arms in the action of yawning, the great toe of the affected side, over which he had no voluntary influence, always immediately moved upwards, and again fell as soon as the yawning ceased.

Hemiplegia Dextra, with Sanguineous Extravasation in the Medullary Substance of the Brain.—Dec. 24, 1811. "W. D., Esq. aged sixty-two, of "regular habits, has enjoyed the most perfect health "for many years. For the few last months, his life "has been more sedentary than formerly. He has "been generally a very quiet sleeper, but it was re-"marked that he snored very loud all last night.

"This morning after breakfast he was attacked with "symptoms of hemiplegia, which came on gradually "but rapidly, commencing in the right arm, and soon "extending to the leg of the same side, followed by "loss of speech, insensibility, and stertor.

"About twenty minutes after the first seizure, six-"teen ounces of blood were taken from the left

"temporal artery, by Mr. Norman, jun. During "the flow of blood, faintness attended with vomiting "supervened. An Enema was soon after adminis- "tered, which procured a copious evacuation; since "which he is easily roused when spoken to, although "his breathing continues stertorous.

"At ten P. M. on the same day, after a repetition "of the VS. ad ℥xvj, and the exhibition of an ape- "rient mixture, gradual amendment had taken place. "He was more sensible, and could articulate, though "indistinctly. On the following day, 25th, the power "of voluntary motion was restored to both leg and "arm. He seemed perfectly sensible, but articulated "indistinctly.

"Dec. 29. In consequence of some hurry in the "afternoon of the 25th, he was again bled ad ℥xij, and "VS. was repeated ad ℥xvj, yesterday evening (28th), "his pulse being 84, and full. The blood drawn had "a dense buffy coat. About two hours after the venæ- "section, while attempting to use the bed-pan, he fell "back in a state of insensibility, which continued "near a quarter of an hour, with cold clammy per- "spiration on the face. No convulsive motion, and "the pulse could be felt. When recovered, he did "not recollect having been unwell. Sinapisms were "applied to his feet at midnight, and a purgative "draught administered, and repeated at four in the "morning, at which time the sinapisms were removed, "without having been complained of. Two fetid "stools since the second draught. Pulse at present "82, not so full as last night. He complains of

"debility, but does not seem materially worse than "yesterday.

"Jan. 1, 1812, ten A. M. His bowels have "hitherto been kept open by aperient mixture, and "the stools have been dark and fetid. This day "pills with Calomel, Aloes, and Ipec. were ordered, "and a repetition of the bleeding ad ℥xij was directed.

"From the commencement of his illness, and "during its whole course, Mr. D. passed little if any "urine, except with his stools, nor did he ever express "any inclination of that kind. No fulness above "the Os Pubis, or tenderness there on pressure, "could be perceived."

I first saw Mr. D. in consultation with Dr. Fellowes, Dr. Murray, and Mr. G. Norman, at half-past twelve on the 2d of January, 1812. He was motionless, and nearly insensible. His face was very slightly drawn to the right side. His eyes were shut. When the lids were raised, he shewed some degree of uneasiness. Both pupils were contracted below the standard of health in a moderate light, and the right somewhat more than the left. It is true that this eye was nearest the window; but neither pupil appeared dilated when the eyelids had been depressed, and both eyes covered with the hand. The eyeballs were directed rather towards the light, and more especially the left. The pulse was 108, moderately full, and somewhat unequal. The respirations were 44, short, and performed chiefly by the diaphragm, with little motion of the intercostals, and none whatever of the supra-scapular muscles. At two o'clock he died.

His head was opened on the following day at half-past one o'clock.

Between the cranium and the dura mater there was more than the usual quantity of moisture; and there was a still greater proportion of transparent fluid between the pia mater and the cortical part of the brain. The blood in the longitudinal sinus had separated into serum and crassamentum, and the exterior veins of the pia mater were preternaturally full of blood. There was little appearance of any arterial ramification on the outer surface of that membrane. The whole brain was extremely firm. In its left hemisphere there was a fissure in the medullary substance, running on the left of the lateral ventricle and parallel to it, at least three inches in length, and extending from about the level of the ventricle so deeply downwards, that on its forepart the substance of the brain in the furrow called Fossa Sylvii was not more than one-twelfth of an inch in thickness. This fissure had very irregular parietes, and did not communicate with the adjacent ventricle. It contained a full ounce of black blood, of which the central part was a moderately firm coagulum, while the surounding portion was as it were mixed with the substance of the brain itself, so as to form a pulpy mass, and to tinge the more solid medulla of a brownish black colour, to some distance all around. No serous fluid remained in the fissure. The arteries on the external surface of the pia mater investing the inferior part of the cerebrum were unusually full of blood. The ventricles contained no more than the common proportion

of fluid; and every other part of the cerebrum, cerebellum, pons varolii, and medulla oblongata, was in the natural state.

No other part of the body was dissected.

The aqueous humour had not transuded through the transparent cornea. The pupils were not dilated, as is usual after death, but were of about that aperture which is common to adult persons in health and in a moderate light. The right pupil was somewhat more contracted than the left.

Case of Hemiplegia from Extravasation into Medulla, following Want of Gout, &c.—T. E., aged forty-four, a glazier, of a thin spare habit, and long neck, had for seventeen years been accustomed to have two fits of the gout annually, one in the spring, and the other in the autumn. In February 1803, he began to have headach, which continued more or less till the 1st of April, when having had no return of his accustomed gout, he was seized with a palsy of the left arm, followed by an obstinate constipation of the bowels. Having tried various remedies, and among others electricity, but without effect, he came into the Bath Hospital on the 7th of September, 1803.

Here he became nearly well, had no return of gout, and was free from headach and all other indisposition, when, at eight o'clock in the morning of November 5th, while walking about, he suddenly became senseless, and stiff, but not convulsed; with stertorous respiration, and loss of motion in his right side.

When I saw him on that day, he shewed something

of intelligence, by lifting up his right hand, though in a very trembling and convulsed manner, when I compressed the right carotid artery. An emetic had operated; but an infusion of two drachms of Jalap, subsequently taken, produced no effect.

On the 6th he moved both legs, but never from the beginning the right arm. His respiration was not very laborious, but chiefly by the diaphragm; and he began to sweat. His pupils were not at all dilated.

All the usual stimulant and evacuating remedies were ineffectually employed, and he died at eleven o'clock on the morning of the 7th, having been for three-quarters of an hour previously convulsed.

His head was opened by Mr. Tudor, in my presence, at half past nine o'clock at night.

The pia mater was unusually thick and somewhat opake, its vessels much distended with blood; and on the right hemisphere of the brain there was some extravasation of serum between the tunica arachnoides and pia mater, of about four inches square. Near the anterior part of the right ventricle, and somewhat above it, was an empty hole in the medullary substance, of about an inch in length, the sides of which were of a livid colour, and had in them distended blood-vessels. It was not easy to decide whether this cavity communicated with the right ventricle, though it probably did not, as the surface of the ventricle itself was of a natural colour. When the right ventricle was opened, about an ounce and a half of thin fluid blood ran out, probably by the communication with the left, which was fully distended with

blood; thegreater part of which was firmly coagulated, and the rest grumous.

There was no other appearance of disease about the head.

Case of Hemiplegia following Want of Gout, with Extravasation into the Medulla successively.—P. C., a gardener, aged forty-six, rather a stout man and moderate as to flesh, who had been subject to the gout, and had occasional colds, attended with spitting of blood, was seized, about the beginning of April 1804, with paralysis of the left side which was said not to have been violent, and not to have affected his speech, though his sight became somewhat impaired.

When he came into the Bath Hospital on the 20th of July, he could walk, though in a limping manner, and could lift up his arm, but had little use of it.

He continued long in the Hospital, in a gradual state of amendment as to his limbs, but constantly complaining of coldness and pain on the left side of his head, and pain of the face, without any appearance of swelling or external disorder. He had two or three slight fits of the gout in the feet accompanied with fever.

On the 26th of March, he complained of pain in his right side, and about twelve at night woke out of his sleep with a total loss of motion in his right arm and leg, and great headach, but not the least loss of sense, or any apoplectic symptom. On the 7th of April, gout came on in his hands.

In this state, without the smallest diminution of paralytic symptoms or headach, with some dimness of

sight, extremely restless, and continually bemoaning himself, so as to prevent all the patients in the ward from sleeping, he remained till the 9th, when a mortification began in his nates, and increased so rapidly, that he died on the 13th of April.

He was opened the next day by Mr. Norman, jun.

There was some slight adhesion between various parts of the dura and pia mater on the upper part of the brain, and between these membranes a little more than the usual quantity of fluid. The blood-vessels appeared to be in their ordinary state. In the right ventricle there were about six drachms of clear fluid, and in the medullary substance of the brain, rather to the right side, and somewhat above the more anterior part of that cavity, there was an irregular opening of about three-quarters of an inch in diameter, with rough, brown, and apparently ulcerated parietes, but void of any contents. It did not communicate with any of the natural cavities. A little before it, there was another small insulated hole, with smooth uncoloured parietes, and also empty. In the left ventricle there was about half an ounce of colourless fluid. In the medullary substance of the brain on the left side, nearly in the same relative situation as the first described on the right, there was a third cavity of an inch in diameter, not communicating with either ventricle, with rough and irregular parietes, and full of coagulated blood of a reddish brown colour.

There was no other perceptible disease in the cranium, except that the optic nerves were somewhat flattened, and, as it were, wasted.

Hemiplepia Apoplectica, affecting the Pupil on the same side.—Mr. H., aged sixty-three, corpulent, a full eater, but temperate as to drinking, living a sedentary life, with a pulse naturally of uncommon fulness and strength and from 80 to 100 in a minute, a short and fat neck, and redness of the countenance, was seized, at half-past nine in the morning, with pain and giddiness in his head, and urging to vomit, which were immediately followed by insensibility and the usual symptoms of apoplexy.

The medical gentlemen who visited him, bled him copiously in the arm and temporal artery, gave him stimulating glysters which had operated well, and applied blisters to his thighs, and sinapisms to his feet.

I saw him at half-past five in the afternoon. He was perfectly insensible to every stimulus, and unable to swallow. There was some uncertainty as to the use of his limbs, none of which, however, he had moved for several hours. His pulse was 126 in a minute, and very strong, full, and bounding, in the radial, temporal, and carotid arteries. His respiration 36, stertorous, tolerably regular as to time, but irregular as to depth. It was curious to observe that at each expiration, which was performed with a jerk, the fore-part of the belly was protruded strongly outwards, precisely as happens in a broken-winded horse. This protrusion was evidently the consequence of the violent depression of the ribs by ———— ————. The shoulders were not at all raised during the strongest inspirations. The mucus which seemed collected in the lungs or about the glottis was occasionally thrown

up into the mouth by a sudden and most vehement effort of all the muscles concerned in expiration, producing the united effect of coughing and sneezing; after which the breath was for some time disturbed with less of rattling.

The mouth evidently drooped on the left side; and as the lower jaw was in some degree fallen, it was perceptible that the tongue was drawn towards the same side. The left eye was also imperfectly covered with the upper lid; the right being entirely shut. Both pupils were wholly insensible to light. The right was extremely contracted; the left dilated to double the size of the right.

Use of Bath Waters in Hemiplegia.—So far as my observation on Hemiplegia has gone, it always has arisen from pressure, and generally from extravasation, in some part of the encephalon; and I have reason to conclude that dyspeptic, and what are called bilious, complaints, act merely by increasing the arterial determination to the brain, and difficulty of respiration by impeding the return of the venous blood in that organ. I am also inclined to believe that neither of these causes would usually, if ever, produce that effect, without the coincidence of some predisposition in the cerebral vessels themselves.

Now it is certain that the Bath Waters, which are a stimulant, of strong and specific powers, have, in all their forms a tendency to produce sanguineous determination to the vessels of the head, and therefore we find them uniformly injurious, when such a disposition in the head exists, showing itself either by head-

ach, giddiness, noises in the ears, an actual sense of fulness or weight, a flushing of the face, great drowsiness, on one hand, during the day, or restlessness, without any assignable cause, at night. On the other hand, where the original predisposition, or the occasional exciting cause, in the head has been removed, and nothing remains but the effect, as indicated by the loss of voluntary motion in the limbs, the Bath Waters externally applied are usually found to have beneficial effects in restoring the energy of the parts affected, even *after all other measures of relief have totally failed.*

This principle may therefore be applied as the rule by which to recommend that Mr. O. should visit Bath, either soon, or at a more advanced period of the complaint. In general, the weather is found too hot for the use of the Bath Waters till the expiration of the present month August; and therefore, should all other circumstances be favourable, I would strongly recommend that Mr. O. should be in Bath by the 1st of September.

Should the bilious symptoms then exist, relief will probably be obtained from a moderate internal use of the Waters, should no unforeseen circumstances occur to contraindicate them.

PARAPLEGIA.—MISCELLANEOUS REMARKS.—Few opportunities are permitted of investigating by dissection the cause of a disease, which cannot be discovered without mutilating in a considerable degree the body which is the subject of the malady. During my prac-

tice, only one instance of this sort has occurred to me; and in that the membrane investing the spinal marrow, as far as consistently with a due regard to appearances it could be traced, was almost every where of a deep red colour from excessive vascularity; whereas in all the instances in which I have examined this membrane in brute animals, I have always found it of a pale yellowish colour. Such, also, it is described by Bichât as being in healthy men. The patient to whom I allude had the affection first in the lower limbs, and afterwards in the hands also. Finally, he died phrenitic. Conformably to this latter symptom, the pia mater was found in a state of inflammation.

It is stated the hands did not suffer till after the lower extremities; and this is so frequently the case, that if the cause which I have assigned be just, it will follow that the lower dorsal, or the lumbar portions of the pia mater, are more subject to be thus disordered than the upper dorsal, cervical, or cerebral. In one slight case of paraplegia, which was suspected to have been produced by a fall, and which was accompanied with various symptoms of diseased brain, the pia mater was found inflamed, or at least preternaturally vascular; but an examination of the spinal marrow was not feasible.

Besides the remote causes of paraplegia which I have stated, there is another which produces affections of the lower limbs, so exactly similar in their symptoms to those above described, that I know not how to distinguish them. This cause is colic, or obstinate constipation of the bowels, which often precedes the

paraplegia. The colic itself is supposed to originate in some action of lead on the constitution ; but many instances have occurred to me, in which that action could not, on the minutest inquiry, be traced. Its most usual sequel, also, is paralysis of the extensor muscles of the hands, and sometimes of the arms. I have known all four extremities perfectly incapable of motion, in several instances preceded by colic, where I could not discover the poisonous operation of lead at any period of the patient's life.

I think there is to be found in one of the older collections of miscellaneous medical tracts the case of a man, who became immediately paralytic in the lower limbs from a wound in the intestines. This implies a curious sympathy between those parts and certain spinal nerves. It must however be observed, that such a sympathy is not necessary in order to account for the operation of lead on any of the extremities ; for I have often known the paralysis follow that cause, without any intermediate morbid state of the bowels.

Paralysis of Lower Extremities.—Considering the pain, soreness, and tenderness which occur in these cases, as in Mr. W. above and below the knees, and ankles, and Mr. D. and others in the feet, and subsequently the numbness of these parts, where there is no projection or incurvation, or other mechanical osseous pressure in the spine, it may be suspected that the affection often arises from over distention of the blood-vessels accompanying the several nerves of those parts.

Proof that Paralysis of Lower Extremities is owing to Irritation of Blood on the Nerves.—In Colonel L., now seven years affected with paralysis of the lower limbs, from disease probably of the spine or brain, though no disorder of structure is observable in either, and who was subject to violent pains in the thighs, legs, and feet, from the hips downwards, these symptoms are always very much increased, and often brought on by a purgative operating strongly.

In *Paraplegia*, as in other palsy, depending on determination of blood to the Nervous System, there is probably, first, undue momentum. In this stage, evacuants and sedatives should be employed. The next effect is mere torpor of the nerves. Some stimuli will then, perhaps, be proper.

In Miss K., with paralysis of the lower extremities, *from protrusion of some of the lower cervical and upper dorsal vertebræ*, there was, when she came to Bath, a total insensibility from the hips downwards, together with a total loss of voluntary motion, but frequent and violent spasmodic contraction and extension of the legs, of fourteen or fifteen weeks duration. After three or four bathings the sensibility of the parts returned nearly to its natural state; but the voluntary motion, after a much longer period, was in no degree restored, though the involuntary was increased. The motion had failed in the beginning, before the sensation.

There was often a very great pain down the back.

In Mr. D., aged forty-two, the complaint began with a sudden and violent pain in the hips, just behind

the great trochanters, and in the axillary plexus, accompanied with fever, which subsided in a few hours, without any swelling or inflammation of the parts.

Paralysis of the Lower Limbs in M. began with a coldness, and frequent catchings and convulsive motions of the feet, often kicking up violently, even when sitting, accompanied with uneasy dreams; and also pain in the lower part of the back.

Symptoms of Paraplegia.—In these cases there is often a sensation in the extreme points of the fingers and toes, and in the feet in general, as if the parts were sore, so that touching or pressing them is painful, though when the impression is very slight, it is not perceived as quickly as in health; that is, there is numbness to slight impressions, and soreness, if the impression is greater; a kind of stinging when touched, mixed with numbness, in the palms, as from stinging of nettles.

Paralysis of Lower Limbs.—In Miss C., these are frequently drawn up and sometimes bent, involuntarily, both in bed and up, without the power of contraction, and accompanied with great pain from the knee to the hip, the toe at the same time cocked up. Her hands are also weak.

Difference between Cases of Paralysis from Pressure on Spine, and from Lead or other Poisons.—In Miss C., who, if I recollect rightly, had no preceding pain in the bowels, there was no absolute dropping of the wrists, or incapacity of motion, but all the motions were weak. In Mr. B., on the contrary, these were, originally, dropped wrists and

feet. Is there any uniform distinction of this kind in every stage of the respective diseases. Quere. In paralysis from lead is there any diminution of sensation?

Paralysis of the Extremities.—In Mr. F., aged about forty-two, it began with a feeling of numbness about the peritonaeum, as if a plaster were stuck to it, or a weight appended to it; and about the same time, in riding, he felt as if the protuberances of the ossa ischia were placed upon two round balls which rolled round, so that he could not keep his seat. This was evidently the effect of the loss of sensation in those parts respectively, as if their places had been supplied by a dead substance. There was a feeling of burning pain also across the lower part of the loins and down the outside of the hips, in the exact direction of the sciatic nerves. The left foot and leg first began to lose sensibility, and the power of accurate muscular direction conformably to the will. Then the right. Quere. Is not this rather an affection of the head than spine? because there are frequent twitchings of the eyelids. In Mr. P. it was certainly so, in whom blindness came on, without dilatation of pupils, after, first, common nervous depression, &c.; then palsy of the lower extremities, and numbness, but irregular action of the muscles. So in Mr. F., but not blindness.

Sudden Paralysis of the Lower Extremities.—Master W. L., aged nine, had good health from his birth till a year and a half old, when he had begun to walk tolerably well. At this period he went to bed quite well, but, on waking in the morning, was found

to have totally lost the use of the lower extremities. He was not known to have had a fall, had no appearance of disease about the spine, or any sign of deviation from health in any other part. It was not till six or seven months afterwards that he began to mend, which he has continued to do ever since; his health, bowels, and appetite, being always perfectly good. He now walks with some degree of limping, especially on the right side. There never have been at any time numbness or twitching of the limbs, or any disturbance in his sleep.

Paraplegia probably from Affection of Brain.—Mr. P., a gentleman of middle age, and of large and muscular conformation, consulted me, at the latter end of the year 1799, for those uncomfortable feelings about the head, and agitation and depression of spirits, which are usually called Nervous. His appetite was good. His nights much disturbed. He was free from dyspepsia, and all marks of hepatic disease. His pulse was rather quick, and most uncommonly full and hard in the radial and carotid arteries, more especially the latter.

I recommended to him low diet, cooling medicines, and frequent evacuations by bleeding and purging. This plan he for a very short time pursued; but finding from it no immediate benefit, averse to the dereliction of his wine, and continually urged by the kind solicitude of his friends to abandon measures which must be injurious in a case which was decidedly nervous, he discarded myself and my prescriptions.

In November 1800, he began to experience those

affections of the lower extremities, which characterize the incipient state of paraplegia. These were frequent twitchings of the legs and feet, which ere long were followed by an inability to direct them according to the influence of the will, so as to sustain his body, though he could in a certain degree move them while sitting, or when he was supported.

At this period I was again consulted; but the measures which I recommended being similar to the former, were received with disgust, and though partially employed, were not administered in a degree which even promised success.

Now, at the interval of several months, in October 1803, another symptom supervened. He began to be painfully affected by the light of the sun, either direct or reflected. His sight soon began fail, so that in about a year he could scarcely distinguish light from darkness. This change was unaccompanied with any sensible disorder in the parts composing the structure of the eyes; and the pupils, so far from being dilated, were permanently contracted almost to a point.

About fifteen years from the commencement of the disease, which underwent no farther aggravation, Mr. P. died, after long continuance of cough, accompanied with bloody expectoration; dyspnœa, which prevented him from lying down in bed; paucity of urine, which was of a high colour; œdema of the lower extremities, and other symptoms, which appeared to indicate hydrothorax.

A dissection was refused.

Mr. P. continued to suffer the state of mental agita-

tion and impatience before described; but never had any delirium or failure of his usual mental powers.

Paralysis of Lower Extremities.—The complaints of Mr. B. began with a slight pain and sensation of burning heat in his right hip shooting down the thigh. After some weeks the same symptoms occurred on the left side. Soon after a pain took place in his back, and he began to drag his right leg, and to be unable to move his left. In July 1808, when he became my patient, he was incapable of standing, and had frequent inability to raise his right knee, the attempt at which was painful, though the knee was neither swelled nor red. He had a great deal of pain down the thighs and knees, which were often affected with involuntary startings and twitchings; and could not always retain either his stools or urine. There was no disorder of his hands. He suffered occasional pain in his head, sometimes accompanied with fever; and during this state the pains in his limbs were much aggravated. During the last week this affection of the head was so much increased as to make it difficult for him either to read or write.

Soon afterwards Mr. B. was seized with febrile symptoms, accompanied, after a very short time, with symptoms of mental alienation, under which, in the space of three or four days, he was seized with epilepsy and died. [1809.

Paralegia and other Cerebral and Spinal Diseases.—Mr. W., upwards of forty years of age, began to feel a tightness round the back and belly, below the stomach and true ribs, as if bound round with a stiff

bandage. It always seemed to him as if his bowels were full; but he was never relieved either by purging or any other remedy.

This symptom continued for full three years, when he began to have pain, and tenderness on pressure, in the thighs, knees, legs, and ankles; which were gradually followed by diminution of sensibility in the legs and feet, and of voluntary motion in the lower limbs. Afterwards there came on some numbness in the two or three smaller fingers of each hand. He was subject to headachs, but had never any colic, and was free from all appearance of spinal disorganization.

He tried a great number of remedies under my direction ineffectually; and afterwards put himself under the care of another Physician, who gently salivated him; in consequence of which having received no benefit, he again subsequently consulted me. Issues were then made on the sides of the spine.

The complaint increasing, he became almost totally unable to use his lower limbs; but was constantly wheeled out into the air in a chair, when the weather would permit, and performed the duty of a public office regularly till the beginning of the year 1809.

May 7. About six weeks ago, he began to feel some pain in his tongue, together with some numbness in that part and the mouth, which continued, accompanied with hesitation and some degree of convulsive stammering in speaking. On the 3d of May he had been suddenly seized with an almost total inability to speak, which had continued nearly an hour. He was altogether free from pain or giddiness

of the head; but had his sleep frequently disturbed by pain down the hips and thighs, in the course of the sciatic nerves. His appetite was good; bowels open; urine high coloured; tongue rather white; pulse 90, full and hard. Blood was taken away, and neutral salts in different forms exhibited.

On the 14th of May he was again seized with total loss of the power of articulation, but was perfectly sensible; but afterwards returned to the state described at the beginning of the last report. Bowels open. Pulse 92, full and hard. Tongue white. The weather had for some days been dry and intensely hot.

He was much relieved by losing eight ounces of blood. Towards the latter end of the year 1809, he began to experience a loss of memory, and gradual mental imbecility.

In January 1810, there came on febrile affections, with incapacity of attention and great restlessness; and at length delirium. Nothing in any degree relieved this state but blood-letting from the temporal artery.

At length these symptoms increased to actual phrenitis, in which there were great heat, quick pulse, constant muttering delirium, and tremor and jactation of his hands and arms, with violent efforts to get out of bed, which were frustrated only by his incapacity of moving his lower limbs. Blood drawn from the temporal artery had a strong cupped inflammatory crust. After remaining in this state between four and five days, he died.

Dissection of Mr. W.—Half past eight A. M Feb. 7, 1810. The dura mater adhered so strongly all round, that on lifting up the sawed portion of the cranium, the dura mater and falx came out with it. It did not, however, appear to be inflamed, but was somewhat thinner than usual. The pia mater was considerably thickened, and more or less opake, being for the most part of a milky colour, on the parts more immediately visible, except towards the occiput, where there was on each side a patch of a dark red colour, of at least two inches in diameter, arising from increased vascularity, or other circumstances denoting inflammation. The same appearance existed generally through each hemisphere, in the same membrane where it dipped down between the convolutions of the brain. Under the pia mater there was a considerable quantity of fluid, which under the dark patches was bloody, and elsewhere serous. The external surface of the cortex was somewhat redder than natural, and abounding with red points, which oozed out blood when the pia mater was removed. The brain was in general preternaturally hard, and the medulla every where abounding with the same bloody points. The ventricles contained about an ounce of transparent fluid. The foramen of Monro, as it is called, was a quarter of an inch in diameter.

Under the tentorium, and round the base of the skull, there were about six drachms of serous fluid.

All the other parts of the brain, and the medulla oblongata, had the usual appearance.

The spinal marrow was examined by cutting longi-

tudinally into the spinal cavity, from about the last dorsal vertebra to the end. There was in that part no disease of the bony cavity, or any disease of the medulla, except that its pia mater was throughout suffused with blood, from the capillary vessels being all full; just as one sees the pia mater of the brain itself in certain cases of diseases in the head, as phrenitis, &c. On account of the difficulty of making the dissection without mangling the body, no other part of the spinal marrow was examined.

All the viscera of the thorax and abdomen were in a natural state, except that the lungs had in them many tubercles, uninflamed, and several small stony or osseous concretions, from neither of which, during life, the patient had experienced any cough or difficulty of breathing.

Paraplegia.—Dec. 12, 1811. Mr. T., aged fifty, a very tall stout man, always accustomed to a great deal of exercise both in riding and walking, an early riser, and temperate in living, has, like the rest of his family, always been accustomed to pain on the top of his head, forehead, and eyes, unaccompanied with giddiness, sickness, costiveness, or any other complaint but coldness in his feet, coming on at irregular periods, and lasting from seven or eight to forty-eight hours. It was occasionally very bad, but was not aggravated by light or sound. That from which he obtained the greatest relief was what produced warmth, whether externally or internally exhibited. For the greatest part of his life he has been subject to flatulency, but has found no difference from different kinds of food.

About a year ago he was seized with a diarrhœa, which affected him six times or oftener in the twenty-four hours. It came on him while he was in perfect health, and without any assignable cause; and was accompanied with occasional griping. It was also aggravated by what turned acid, and was chiefly relieved by absorbents. It has not impaired his appetite, though it continued more or less for six months, and then it disappeared from certain astringents. He was at the same time desired to give up his strong exercise.

About three years ago he strained his left knee, and found relief, not without difficulty, after the lapse of some months.

About a month after the cessation of the purging, there came on a weakness of the left knee, without pain or swelling, either usually, or on exertion. This was gradually succeeded by weakness of the whole extremity from the hip downwards, unattended with pain or numbness, but accompanied with great coldness, and followed by more shrinking of the muscular substance than in the other leg. The right leg and both hands have since also begun to be affected in the same way, and the adductor muscles are considerably shrunk.

He has had no return of his nervous headachs for a year and a half; has not been a cider drinker, or any way that he knows of been exposed to the operation of lead, and has never had dry belly ach, or pains in his arms. Pulse 84, and soft. Bowels

regularly open. Appetite tolerably good. Sleep usually rather sparing.

This gentleman continued the external use of the Bath Waters, and occasionally their internal use, till the beginning of March, in consequence of which the progress of weakness was stopped, and even considerable improvement of strength took place.

Paralysis of Lower Extremities.—Mr. D., aged about forty, who having been an officer in the Guards had lived freely, and taken a great deal of hard exercise, about nine in the evening, in the month of November, was suddenly seized with considerable pain under the arm-pits and down the hips. He, however, eat his supper, and went to bed and slept. About the middle of the night he woke with violent pain in his hips, and took Tincture of Guaiacum, which produced perspiration, ease, and sleep. The sweating continued the next day with some fever. He remained in bed till noon, and then rose free from pain.

For three weeks from this time, he continued going about, with some numbness in his feet; after which, they became very hot and painful at night, with an evening accession of fever, so as to deprive him of rest and sleep. At the same time he became very costive.

For these symptoms he tried the hot sea bath, from which he experienced great pains in the calves of his legs; and the numbness of his feet increased.

He has now an almost total inability of using his legs so as to walk, together with numbness of his feet,

and of the two smaller fingers of one hand, which spontaneously contract, and cannot easily be opened. He has never had any notable disorder of his stomach or bowels.

This gentleman was cured by the use of the Bath Waters.

What is called Palsy of the Extremities.—August 21, 1813. Mr. K., aged forty, in the law, and consequently leading a sedentary but a free life, began about the year 1803 to have a pain across the region of the kidnies, accompanied with occasional sickness, and a difficulty in making water, and, as it is said, a discharge of blood and coffee-coloured urine, with mucus, but no calculus. This difficulty of making water has continued more or less ever since; but no strictures exist in the urethra, or about the neck of the bladder. In 1804, some numbness began in his feet, attended with difficulty in directing them. In 1805 and 1806, he became better; but afterwards the complaint was somewhat aggravated till 1809 or 1810, so that he could not walk without difficulty, and, as he says, a heat and pain in the same part of the loins. The pain was sometimes only on one or the other side; and then the testicle on the same side was retracted. The uneasy sensation shoots down the back part of the thighs, affecting and drawing up the tendines Achillis, so as to produce a great cramp in those parts. For these complaints Mr. K. tried various remedies as for gravel, and also issues for six months on each side of the lumbar vertebræ, but all without any augmentation of the sensibility or volun-

tary power of his lower limbs. About two years ago he began to feel weakness of his hands, in which there is no diminution of sensibility, except in the middle finger of the right hand. He has never had any headach or giddiness, or pain about the back of the neck. Bowels generally open once a day. He makes very little water during the day; but often at night almost a chamber-pot full. The urine is said to vary in colour, being red when his back is much pained, and of a natural colour on other occasions.

This gentleman received no benefit from the external use of the Bath Water, any more than from the various local and general remedies which he had before tried.

Miscellaneous Remarks.—*Dropped Hands from Lead.*—It is curious to see how, by the constant want of action in the extensor muscles, the wrist and back of the hand become convex, first in the direction of the dropping, and secondly by the application of the thumb and little finger to each other on the side of the palm. This globular form does not exist, except when the extensor muscles are shrunk. It does not occur when the great flexor muscles on the ball of the thumb, and the abductor indicis are chiefly so, without the extensors being affected.

There is often a swelling on the back of the hand, which appears evidently to be nothing more than the os magnum or capitatum, which is unusually prominent, first, from the increased arch-form of the wrist as already explained, and secondly, from the wasting

of the cellular membranes, and the external interosseous muscles of the metacarpus. (1806.)

Colic with Dropped Hands.—In Col. Q. the pain is always relieved by a copious watery stool. There is always a pain about the navel when a fit of the complaint comes on, accompanied with a pain in the scapulæ, deltoid muscles, fleshy part of the forearm, and across the backs of the hands. Surely this case is of the same nature as common bilious cases. It is attended by violent and quick beating in the heart. [Oct. 1808.]

Paralysis of the Hands arising from Lead, without any previous Colic, &c.—I have seen about four instances of this kind in painters or plumbers, but never in cider drinkers, in the latter of whom the complaint always comes through the medium of the alimentary canal, to which the poison has been immediately applied. The proportion, however, of the former cases is very small, as for many years past I have rarely been without from six to twelve patients labouring under this disease.

Palsy of the four Extremities with Colic, but without the previous Action of Lead.—Thomas S., aged forty-two. Above the middle size and stout.

In the year 1798, acting as captain's servant in the Henry Addington East-Indiaman, was wrecked on the 8th of December, at the back of the Isle of Wight. The gale was very strong, and the spray, while he remained on board, went over the topmast head. He came on shore in a boat, after having been long wet, and a considerable time in the water at ten

or eleven at night; after which he rode on horseback in the frost about four miles and a half. On the 24th of December, he sailed in another East-Indiaman to Bombay, having in the intermediate time a cough from cold, with soreness of chest. After he had been on board about three weeks, he was seized with a colic, with costiveness, which continued without relief for several days, with fever and delirium. He continued more or less ill in his bowels till he arrived at the Cape of Good Hope five weeks after, and in about three weeks more he was seized gradually with paralytic affection of hands, and soon after of the feet. He does not recollect the intervention of any pain in the muscles or joints of the legs or arms, or any pain or giddiness of the head. He bathed for five months in the warm baths, 160 miles from Cape Town, and got well. He returned to England in good health.

It must be remarked that this man never drank more than a gallon of cider in his life; that the vessels in which the food was dressed were of tin; that while on board he drank grog, or porter, or chiefly wine, and not to excess; and that no one in the ship in which he went out was affected in a similar way. He says, however, that the gunner who was on board the wrecked vessel was seized with an affection of the bowels, and did not live above two months.

He continued well, without any complaints in his bowels or limbs, living, as he says, temperately, till Sept. 1803, when he went out in the Sir Edward Hughes, East-Indiaman, direct to Bombay, in which

he drank grog, wine, and porter, as before. After being on board two months, he was seized, without any assignable cause, except perhaps cold from the wetness of the ship, with a violent pain in the bowels, with costiveness as before, which for several days admitted of no abatement. A weakness of the hands and feet soon after began, and gradually increased, so as by the time of his arrival at Bombay, about February or March, to render them perfectly useless, without any preceding pain of any kind.

On his return to England in 1805, he became a little better, so as to be able to walk; but in about a month afterwards, without any apparent cause, had another very violent attack in his bowels, in which the weakness of his hands increased, and the use of his legs was again entirely taken away; and for these complaints he remained in the Marybone Infirmary more than five months, experiencing some benefit in his legs, but none in his hands.

Into the Bath Hospital he came the 16th of May, 1810, with no use of his hands and little of his legs, the muscles of his hands being very much shrunk; but all parts free from pain.

He says the ships were not fresh painted, and that all the utensils, boilers, &c. are of iron or blocked tin.

Contracted Hands.—Miss T., aged fourteen years and three quarters, became my patient on the 9th of April, 1799. She had all her life been subject to headachs, for which she frequently took Emetic Tartar, which brought away bile and relieved her. She had also been liable to fits of fever, which would continue

for a day with such violence, as almost to produce delirium, and then subside, so as to leave her nearly free from complaint. One of these attacks in the course of the preceding winter had been accompanied with an eruption on the skin, of two or three days duration. She was always of an irritable temper, frequently bled a little at the nose, and in the autumn of 1798, had a slight attack of hysterics.

For six or eight weeks past she had felt occasional numbness or sleepiness in her hands and feet. At the latter end of March, she had menstruated for two days, for the first time, and in moderate quantity. Soon afterwards she seemed to have caught cold, and was hoarse, with a slight cough, and diminution of appetite, but no apparent fever, or heat of her head.

On the morning of April the 8th she appeared flushed, and said that her head ached; soon after which she bled a little at the nose. She therefore remained in bed, where she slept in a disturbed manner till four o'clock in the afternoon. On that day she had no motion. Towards evening these complaints abated; but she lay awake for the most part till six in the morning of the 9th.

At four o'clock she was in a very unquiet state, with dry throat and headach, a deadness and cramp of her hands, and numbness of her left foot. She slept, notwithstanding, from six till eight.

On waking at that hour, these complaints increased; and at ten, her hands were rigidly drawn inwards, with great pain in her wrists, and straightness of her fingers. There was little contraction in the arms

themselves; but she felt easiest when her elbows were bent. This aggravation of her complaints seemed to have arisen from her having taken some opening physic at half past nine, which made her sick, and strain a good deal in vomiting. What she threw up was of a green and yellow colour. Pulse 108. Her medicine had twice operated.

Draughts were ordered her of Citrate of Ammonia with a drachm of Tartrate of Soda, which were to be repeated every four or five hours, so as to keep her bowels gently open. These operated four times before night, and at nine in the evening her face was less flushed, and the contraction of her hands somewhat diminished. She had no headach, giddiness, or sickness. Pulse 96. The draughts were continued.

On the 10th, I found that she had slept well till half-past one, and afterwards, with a little interval, through the night. When she last woke, her hands were perfectly relaxed, and she was free from headach and giddiness. One motion. Pulse 84. Urine of the natural colour. The draughts were ordered to be continued, and one-third of four grains of Extract of Hyoscyamus was directed to be given at ten o'clock in the morning, and repeated every five hours.

About nine o'clock she became chilly; notwithstanding which she went to sleep; but woke at ten, with her face flushed, her eyes red, preternatural heat of the skin, and aching pain in her head and hands. Through the night she continued restless and impetuous, but not incoherent, frequently wanting to get out of bed. She coughed in some degree,

expectorated a little mucus, and had a great stuffing in her nose, and occasionally a choaking in her throat, which was attributed to phlegm.

On the 11th, between two and three in the morning, she had some pain in her bowels, but no stool. The pain of her hands was somewhat relieved by hard friction. About half-past five she became more cool, and dozed at different times for an hour and a half, but did not wholly lose the preternatural heat till a little before seven. Shortly afterwards her nose bled about an ounce and a half, which diminished the stuffing in her head, and entirely removed the pain in her hands, which immediately before had been very considerable. Then she had half an hour's comfortable sleep.

At the time of my visit, she had taken two pills and draughts, and was free from headach, contraction, and pain; but had still some slight numbness in her right thumb. Urine of an amber colour, with a slight mucilaginous cloud. Pulse 92, and rather full and hard.

She recovered, without relapse or aggravation of symptoms; her pulse on the 14th being reduced to 72 in a minute.

It is not uninteresting to remark, that the aunt of this young lady's father had St. Vitus's Dance when young; that himself and all his family were gouty; that her mother was occasionally affected with depression of spirits, amounting almost to mania; that her mother's family and her sister were all disposed to violent nervous complaints; and that two of her

brothers died, under two years of age, of hydrocephalus internus.

This is altogether a curious case. It shews the common nature of certain diseases in the same family; proves that symptoms of cold in the head and throat are often what is called nervous; that contractions of the hands are the effect of determination to the head, and are capable of being relieved by bleeding from that part.

This young woman ought to have been blooded.

Paralytic Hands from Colic, without the known Influence of Lead.—Mr. W., aged between thirty and forty, about four years ago, without any knowledge of any mode in which he could suffer the influence of lead, having never drank cider, or white wine, except very rarely, &c. began to complain of pains about the navel, which were very different from griping, but were like a severe aching and numbness, accompanied with violent pricking, obstinate costiveness, and occasional sickness with bilious vomiting, but no retraction of the forepart of the abdomen. He was at that time confined for about a fortnight, having with great difficulty, and after the lapse of four or five days, obtained stools. In the course of a year he had three or four of these attacks, and in one of them took thirty grains of Submuriate of Quicksilver, without being purged.

At the latter end of May last, having had no attack subsequently to the January before, he began to have a pain about the outside of the right wrist, and back of his hand, which became very severe, and about

July the parts became red and swelled. He had never any pain in the shoulder or fore-arm; but about June, before the commencement of the swelling, he began to feel in his right hand some numbness and weakness, the latter of which increased till August, when the hand dropped, and he was totally incapable of extending the fingers, or raising the hand.

About the 1st of September, he had a violent attack of what he called hard pain in the bowels, with loss of appetite, sickness, and palpitation of the heart, which continued for five or six days, during which time there was an obstinate costiveness, and the fæces discharged were in form of hard balls. During two of the days he was delirious. The bowels being then well opened, the pain and other symptoms abated as usual.

In October, he first began to have numbness in his left hand, attended with difficulty of motion, and afterwards pain in the wrist and back of the hand.

For about ten days he has had a swelling of the first three fingers of the same hand, which are in no degree contracted. This swelling is tender on pressure, is painful when the fingers are shutting, is reddish when warm, and rather livid when cold. The knuckles of the three fore fingers of the right hand are nearly in a similar state. In these fingers there is no numbness. The muscles of both fore-arms, and more especially the right, are considerably wasted; and so is also the ball of the right thumb. Those at the back of the arms are very sore. In the month of October a pain came on in both shoulder-blades,

which increased till within these ten days; and the muscles of the scapulæ are very much shrunk. After sitting upright, or inclining forward to read, he has some aching pain about the vertebræ of the neck and down the loins; but the lower extremities are not at all affected. Within these four or five months he has had a good deal of headach, and on first getting up is for a short time giddy. His sight and hearing are good; his skin cold and pallid. His appetite is irregular, his bowels open, and he is not flatulent. He sleeps well. Pulse 96, and soft.—Let him avoid all kinds of flatulent food, abstain almost wholly from wine, use the pump on his shoulders and arms in the usual way, and take every night a moderate dose of Extr. Colocynth. comp.

Feb. 3, 1809. He has continued to take the Colocynth pills every night, once interposing a dose of Submuriate of Quicksilver. He persevered also in the use of the pump of Bath Water till about six weeks ago, when he left Bath; soon after which his hands, which had before greatly mended, became much better, so that he can now write, though with difficulty and pain. He continues to have a pallid countenance, and slight occasional pains in his bowels, which are always removed by a mercurial purge. He has had no violent attack of the costiveness, though at various times he has been obliged to take from four to six of his Colocynth pills, in order to produce two or three evacuations. He has still some lividness and swelling on the back of his right hand, but less of pain and tenderness in both, though the large knuckles

are red and somewhat sore to the touch. He is free from sickness and headach, and much better in his general health than he was. Pulse 80, moderately strong and regular. Tongue clean.

He complains that the impulse of the water on the swelled parts of his hands, which was made without my knowledge, aggravates the symptoms.—Let the pump be directed only on the muscular parts of the arms and humeri.

℞ Hydrargyri submuriatis gr. iss.
Extracti Colocynthidis compos. gr. viii.
Pulveris Scammoneæ compos. gr. ijss.
Syrupi Croci quantum satis sit. Ft. Pilulæ tres æquales, horâ somni, pro re nata, sumendæ.

This gentleman continued some months at Bath, chiefly under the external use of the Waters; and went away with no apparent relics of the disorder.

Paralytic Hands without previous Colic.—Nov. 9, 1810. Mark B., aged twenty-eight, painter and glazier, tall, well made, and rather stout, fair, and with red hair, about ten weeks ago, when in perfect health, was seized, while walking, with an itching of the right wrist, and, on examining it, found a swelling on the back of it, which appears to be hard and moveable, and is probably a ganglion. The same evening the little finger dropped. The following morning the next finger was similarly affected, and soon after the third. The fore-finger is less weak, but the thumb in a week, and the whole hand, in a fortnight, became also useless, and drops. About two months ago the left hand gradually shared the fate of the

former, though in a less degree. After the right hand had been ill a fortnight, it became affected with tremors on exertion, but not while at rest, and the same disposition to tremor now exists in the left hand.

For these two years past he has not followed the plumbing, glazing, or house-painting business, but only that of flags for the navy; in which, however, he uses white lead, but in small quantity. He never had at any period any morbid affection of the stomach or bowels, though the latter were rather costive than otherwise. His appetite was also very good, especially in the morning, when, he says, those of his trade usually are averse to food. He asserts, also, that he has been very temperate in his living.

At the commencement of the attack he suffered frequent pain, with some degree of tenderness, about the inside of the elbows, and about the deltoid muscles, especially on the left side, in which the pain was so great, when he hung his arm down, that he was obliged to have it supported with a sling. He had, however, no swelling of those joints; though he had previously been subject to gout in the feet, with great inflammation and swelling.

Dropped Hands without previous Colic.—R. N., aged forty-five, a painter, has had three fits of palsy in his hands, of which the first was eighteen years ago, when he lost the use of his feet as well as his hands. Since that time he has had two other fits, one about five or six years ago, and then again last Christmas, which has continued till this time. Neither of these fits were preceded, or accompanied, by any

sickness or pain in the stomach or bowels; and they have never been costive till of late, and, when not open, have always been easily moved by a moderate dose of physic.

The first attack came on suddenly, his hands having been a little weak in the morning, and completely dropped by two or three in the afternoon. On the following day he began to have pain in the fore-arms about the wrist, which extended upwards to the shoulders, just, according to his own expression, "as if they were dipped in scalding water." At the same time he lost his appetite. After that, he recovered without any internal medicine, but gave up his business for three years.

He then resumed his business; and the second attack began gradually, and increased, without any previous or accompanying pain in his arms or elsewhere. He recovered from the second attack, but continued weak.

The third attack came on about the 20th of December, 1810, in the course of two or three days, without pain in his arms, but with total mental alienation, without sleep, and such despondency that he attempted to destroy himself. This continued for three weeks; when he recovered a tranquil state of mind, and grew somewhat better, till his entrance into the Bath Hospital, May 29, 1811, when his hands were quite dropped, and his legs weak.

He has occasionally had swimming and pain in his head, and still continues to be so affected, though in a very slight degree. Appetite and health otherwise

good. Pulse 72, full in the radial artery, but extraordinarily full and hard in the carotids.

This man used the hot bath twice a week, and had his shoulders, arms, and hands, pumped on in the usual way ; and left Bath nearly free from complaint, and capable of working, in the beginning of October.

Contraction of the Hands, &c. from Fulness of Blood in the Head.—The Rev. Mr. M., of middle age, for a month subject to cramps and contractions of his hands, which used to occur, with a sense of uneasy fulness in his head, whenever he stooped much in gardening. At this period he was seized with temporary loss of sight and delirium, followed by hemiplegia and a total loss of sense, which continued for fourteen or fifteen hours, and then nearly left him, without much complaint except weakness. From this time, which was three years before my attendance on him, he continued subject to uneasiness in his head, with contractions in his hands, and numbness and spasmodic twitchings of his arms, especially on stooping. These affections of the hands and arms were twice afterwards accompanied with more or less failure of sense; but were immediately relieved by bleeding.

Contracted Hands and Feet.—Caroline T., aged eight, ricketty and weak in her lower limbs, and small, subject to irregularity of bowels, with purging and dark coloured stools, was suddenly seized with violent contractions of the wrists, hands, and feet, accompanied with excessive pain of those parts. She had considerable heat of the skin, and a pulse of 132 in a minute. A dose of Calomel with compound powder

of Scammony was given her. It produced several loose and very black stools. The next day, the spasms of one hand and both feet were relaxed; and after a repetition of the dose, the limbs and pulse were restored to their natural state. [Oct. 1810.]

In Mr. B., the *contraction of the arm and fingers*, which is generally more or less rigid, is always relaxed after the hot pump, although the strokes are directed on the lower limbs; and gaping in him, and many other patients similarly affected, draws the arm upwards and inwards.

Contraction of the hands was removed by bleeding at the nose in Miss J.; by cupping in Miss M.; by cutting the temporal artery, in a patient of Mr. Phinn's.

In palsy, in order to prevent *contraction*, watch the first disposition, lest the muscles should become irregularly contracted.

Spasmodic Contraction of the Thumbs.—April 30, 1812. Mrs. D., aged about fifty, who for five years has ceased to menstruate, has long had enlarged liver, and has been subject to various disorders of the alimentary canal, has for three weeks had a violent cough accompanied with some dyspnœa, and preceded by a great degree of catarrh. On the 26th, in the afternoon, she had a severe headach, attended with cold shivering. The latter lasted only for an hour, but the former continued till the next morning, when there appeared a violent red rash all over her face, arms, and hands, in consequence of which her face was so swelled, as for several hours to close her

eyes. This eruption has gradually subsided, without suppuration or exsudation, though there still continued some redness and roughness of the face, and various parts of the hands. On the 26th, after some slight twitchings in her hands, she perceived in them a kind of numbness, accompanied with a contraction of both thumbs, which are now pressed inwards, so that she cannot in any degree open them. They are affected on the balls with great pain like cramp. The sensibility of the whole hand is now natural. She continues to have much uneasiness and giddiness of her head, with a tightness round her chest, which does not, however, incapacitate her from taking a deep inspiration; a frequent cough with occasional expectoration, which resembles thick mucus somewhat suffused with dark blood. She has a frequent rising of acid in the throat, and flow of saliva into the mouth, vith straining to vomit, but no heart-burn. Pulse 84, and soft. Appetite bad. Skin cool. Tongue red and sore, with broad patches of white fur. A loose stool to-day. For this week past she has had no appetite.

℞ Magnesiæ Carbonatis ʒij.
Cretæ præparatæ ʒj.
Pulveris Jacobi gr. ij. M. et divide in chartulas viii æquales. Sum^{t} unam hora somni et cras primo mane.

May 5. These powders have operated three or four times a day on her bowels. Acidity, however, remaining, she was ordered, on the 2d, two table spoonfuls of a mixture, with Carb. of Potass, p. r. n.

Her liver is hard and swelled, but without pain or soreness on pressure. Her cough and sickness are nearly gone.

May 9. On the 7th, she had a return of the spasmodic contraction of her thumb, which preceded a violent heat and pain in her bowels. Pulse 84. Weight and confusion in her head. I directed VS. ad ℥x, which immediately relieved her, and she has since had no spasm in her thumbs, and had several hours refreshing sleep. Her head is better. The blood has a thick strong crust of lymph with fimbriated edges. She continues the powders twice a day.

May 18, six P. M. The powders, after a short time, had little or no effect upon her bowels; in consequence of which she has had a good deal of heat, and has had recourse to pills which I formerly ordered her. Before their operation, after three days of costiveness, there was some disposition to return of spasm of the thumbs, which ceased when her bowels were opened. In other respects she is tolerably well.

Affections of Speech, Modification of Paralysis. —Mr. P., aged sixty-eight, a fat and very strong man, with a large head, was suddenly seized with loss of speech, but no weakness in his limbs, so that he walked without difficulty from the place of attack to his own house, half a mile distant. This happened two years ago ; and I first saw him yesterday, March 14, 1813. His articulation appeared to be little impaired. He could move his tongue, swallow, and taste well. His malady, therefore, appears to have been

oblivion of words, which extended equally to writing as to speaking, but which is considerably diminished since the first attack. The faculties of his mind are in other respects good; and he very quickly comprehends every thing which is said to him.

This example seems similar to what we see every day with regard to persons who understand, but cannot speak, Latin, French, and other languages. The sound or sight of the word immediately suggests the idea and corresponding word in English; but the converse does not take place.

Quere, Affection of the Glosso Pharyngæus?— Mrs. P., aged sixty, a married woman without family, has been healthy till of late years, when she has been short breathed on going up stairs or lying in bed, in consequence of which she was obliged to have two pillows, and could lie but on the right side. This was accompanied with occasional palpitation during strong exertion; but her breath and circulation have been good, when she has walked on plain ground. Since the dyspnœa came on, she has been subject to long continued coughs with expectoration, which, however, have sometimes entirely left her; and she is now free from them. For a year past, she has been affected with a difficulty of speaking, as from immobility of the tongue, which was increased gradually so that now she can scarcely pronounce some words. When she puts it out, which she seems to do easily, it appears to be more circular, and of course less straight in its right than in its left outline; in consequence of which it seems to draw rather to the left. She

has, also, considerable difficulty in swallowing; and the tongue, though in a natural state as to sensibility, with her taste just as before, has occasionally some tingling in it. The difficulty of motion seems to her to be in the throat and root of the tongue. This complaint followed a bad cough, and came on as that left her; but it did not seem to arise from any particular fit of it, nor was it deducible from any known cause. She has no pain in any part of her head or neck, nor any insensibility of those parts. Pulsation of both carotids extremely strong. Pulse in the radial artery weak, and 72 in a minute. Feet apt to be very cold. Bowels generally costive. Urine various as to colour. She has not led a sedentary life, or been hysterical. She sleeps well.

Loss of Speech.—In Mr. G. the paralytic affection was very peculiar. He totally lost the power of speech, his mind and recollection remaining clear, so that he could understand all which was said to him, and could hold a conversation very accurately, by means of printed or written words, which he exhibited in the proper place and occasion.

Sudden Loss of Speech.—A Lady, aged seventy, who had been for some months affected with hemiplegia, from which she was so far recovered as to be able to walk with some assistance, and had no affection of the organs of speech, was one day attempting to get out of a wheel-chair, when her foot caught something on the ground, and had it not been for a person standing near her, she would have fallen. By this accident she was very much shaken, and entirely

lost the recollection of words in speaking. So that when I attended her several weeks afterwards, though she perfectly understood every thing that was said to her, and had no defect whatever in the power of articulation, she was not able to speak any words but yes and no.

Taste.—Affection of the second and third Branches of the Trigeminus.—Mr. J., aged about thirty, of a spare habit, had for a considerable time laboured under great depression of spirits, which was somewhat relieved, when, in the month of November 1810, being out hunting, with a hat which was rather too small for his head, and the cape of his coat accidentally turned back, he was exposed on the back of his head and neck to a violent and very cold blast of wind. That night he slept well, but woke in the morning with a loss of motion in the muscles of the right side of his face, accompanied with the usual dropping of the right corner of the mouth. This was soon followed by violent pains in the occiput, and shortly afterwards by a drooping of the lower eyelid on that side, as well as an incapacity of shutting the upper eyelid. At the same time, though he does not remember that there was any numbness or insensibility in the cheek, or defect of smell or vision on the affected side, he perfectly lost all taste on the right side of the tongue, while the other half retained its usual discriminating power, and the motion was not impaired. The limbs were never affected. His taste has now returned, and he can depress the upper eyelid, but cannot elevate the lower one.

From the parts which suffered in this case, there can be little doubt that the disorder arose from an external cause affecting the second and third branches of the Trigeminus, or fifth pair of nerves; but as there was no difficulty of moving the eyeball in any direction, or of speaking or swallowing, it follows that the first branch of this nerve, or the ophthalmic, was in this case unaffected, and that the fifth pair are to the tongue the proper nerves of taste, but not of motion. [March, 1811.]

Vitiated Taste.—Capt. H., aged forty-six, above the middle size, accustomed to live freely, and, in consequence of being in active naval service in the Revenue, obliged to late hours, and occasionally to long sitting at a desk, was three years ago affected with a severe fit of the gout, from which he has since suffered only occasional slight attacks. On the 4th of November last, after drinking pretty freely, and afterwards walking fast, in consequence of which he sweated considerably, and then stood a good while with his head uncovered, for the express purpose of removing the sweating, was seized with a violent heart-burn, for which he swallowed a full quarter of a pound of Spanish Liquorice. Previously to that period, he was also, on account of some apprehension of fœtor in his breath, accustomed to eat considerable quantities of orris root, of which he swallowed the substance as well as the juice.

On the 5th of November, he began to perceive, what has continued uniformly ever since, a great degree of sweetness in his saliva, which communicates

itself to all the food and drink without distinction which he takes, and makes his teeth feel as if they were on edge. There is not, however, the smallest degree of sweetness in the saliva. The saliva is increased in quantity and sweetness from the thought of eating, and also from much stooping. He moves his tongue freely, and it is sensible to every thing touching it. He has been in the habit of taking various quack medicines, as Velnos' Vegetable Syrup, and Rymer's Cardiac Tincture, under a course of the latter of which he was when this disordered taste first occurred. He has no headach, or nervous affections, but is apt to fall asleep when writing, reading, or even talking. His urine has never been excessive as to quantity, but often, as he says, of a dark colour like porter, and of a smell like wort. What I have seen of it is clear, of natural quantity, and somewhat high coloured, without the least diabetic appearance. His tongue is clean. Pulse rather full. Skin cool. Appetite good. He has occasional pain, or what he calls weakness about the loins, but no symptoms of nephritic complaints.

This disease has been treated with blisters to the throat, astringent gargles, the common remedies of dyspepsia, and lately with the regimen for diabetes, and subcarbonate of Soda. Since the latter plan, his bowels have been habitually costive.

Blood taken from him, by my desire, has no buff coat, but is florid and firm, with the natural proportion and quality of serum.

Conceiving this complaint to be a vitiated state of

the organ of taste, I advised him to return to the use of a moderate proportion of vegetables, eating meat only once a day, and abstaining from salt or fried meats, all acid and acescent food, pastry and confectionary, spirits and fermented liquors.

I recommended, also, as early hours as his professional avocations would admit, and prescribed for him one grain of dried Squill, with half a grain of Barbadoes Aloës, to be taken thrice a day for a month; at the end of which period, I begged that he would again lose eight ounces of blood.

Paralysis of Trigeminus Muscle.—Mrs. T., aged between forty and fifty, fat, living full in point of food, averse to exercise, and subject to coughs, accompanied with difficulty of breathing, and to costiveness and headachs, had been unusually well for three months, but had not menstruated for seven weeks, when on Thursday the 20th of June, 1811, she felt, on lying down, some pain between the mastoid process and occiput, and down the neck, on the left side. At the same time her taste became so vitiated, that every thing which she attempted to eat tasted of Nitre. On the 22d, she felt some difficulty in shutting the left eye.

These symptoms continued, without fever, or any other complaint, till the 24th, when she awoke in the morning with the addition of a drooping of the left side of the mouth, and an inability to raise that side of the upper lip. At the same time there was some increase of soreness on motion or pressure in the muscles on the left side of the neck, near the

spine, and the same affection had extended itself to the cheek bone, and lower jaw. Her head also felt uncomfortably; but this she attributed to great apprehension as to the nature and tendency of her complaint.

In addition to these symptoms, there was a tremulous motion in the upper eyelid when she attempted to shut it, her eye was disposed to water, and there were slight twitchings of the muscular fibres, such is vulgarly called "life blood," in the cheek near the inside of the eye, and in the upper lip.

All these affections were on the left side. The other was perfectly free from complaint. She had no insensibility of the parts, no defect of vision, smelling, or hearing; no giddiness in her head; no difficulty in moving her tongue, or any part of her throat, in swallowing or speaking.

All stimulating food was abstracted, and local and general evacuations were employed; in consequence of which, by the 2d of July, all the complaints were diminished, and she was able wholly to depress the upper eyelid, and to raise with more ease the corner of the upper lip.

In the course of the following week, the pain about the neck, occiput, and face, the muscular debility, and nitrous taste, had entirely disappeared.

Nov. 24, 1811, Mrs. T. for a considerable time past has had occasional strong beatings of the heart. She has taken much more exercise than before her former attack, has wholly abstained from every form of ardent spirits, and eaten meat only every other day.

For ten days past she has had a return of the nitrous taste, which seems to mingle with all solid food, whether chicken, bread, &c.; but she is not sure as to drink. This affection does not seem confined to one side of the tongue, in which also there is no degree of insensibility, or incapacity of motion; and when the tongue is put out, it is perfectly straight. There is a frequent trembling of both eyelids, which is more in the left than the right. There is, however, no stiffness, dropping, incapacity of motion, or diminished sensibility in any part of the face, no pain about the neck or side of the head, and no vertigo or headach. Bowels uniformly open by Cheltenham salts. Pulse 84, and soft.

Detrahantur è Nucha Sanguinis ℥x, ope Cucurbitularum cum scarificatione.

Neither this remedy, nor subsequently the application of leeches, or of a blister, produced any immediately good effect; but by degrees the symptoms of disease subsided, and she was restored to her pristine health.

Paralysis of the Trigeminus Nerve.—May 6, 1810. Mr. G., aged about forty, was exposed, while sitting, on the 19th of December, 1809, to a draught of cold air from behind him, in consequence of which that side of his neck became as cold as if ice had been applied to it. The next morning he felt what is called a crick in the neck, and a numbness and pain on motion up the side of the occiput; and there was also some soreness and redness on the side of the neck. On the 21st, when he got up, he perceived

his mouth fallen on that side, with an increase of numbness, that is, diminished sensibility, of the cheek. On the 22d, the numbness and incapacity of motion affected the whole of the right side of the face, beginning from before the mastoid process, and occupying the face from the scalp down under the jaw and chin, precisely terminated by the median line from the forehead through the centre of the nose downwards. He could neither shut the right eye, nor elevate the side of the upper lip. He could turn the eye itself in every direction, and saw well and clearly. He has no recollection that the tongue or throat were affected, except that when he swallowed, the food seemed to his feelings to pass down only on the left side. He was perfectly free from giddiness.

He obtained medical assistance on the 23d; which was chiefly given by the administration of large blisters on the neck and occiput. On the two following days, there was considerable fever, with increase of pain all over that side of the head, in consequence of which he was again blistered behind the ear, on the jaw, forehead and temple, and had various other stimulants applied to the spine, and feet, and camphor, &c. given internally.

The eyelids are now nearly but not quite capable of being closed; but the mouth continues to droop on the right side, and the cheek in some degree to want the full power of elevation.

His health is in every respect perfectly good.

My attendance on Mr. G. having commenced many months after the attack of disease, he was not able to inform me with precision, whether his taste

was affected, or in what exact part of his mouth or fauces he felt the want of sensation. It doubtless was where the part was supplied by the inferior maxillary branch of the left trigeminus; and from this case as well as that of Miss D. L., it should seem that this branch is the organ of general sensation as well as of taste, while from most of the other cases it is evident that the glosso pharyngæus, or ninth pair, is not the nerve of taste.

As in both these last cases the parts affected were only those supplied by the common trunk of the fifth pair of nerves, it is evident that the disorder was not in the brain, but in some external part, merely affecting that nerve; and the situation of the cause is clearly pointed out by the seat of previous pain, which was about the mastoid process and side of the occiput. This conclusion is still farther proved by the total want of all symptoms of cerebral affection, and by the occurrence of the nervous imbecility on the same side with the pain, which is contrary to what happens when the pain arises from causes acting on the organ of the nerves within the cranium. I have seen many other examples of this hemiplegia of the face from external pressure. In a single year I had no less than six cases, some of which followed a clear and distinct rheumatic pain, and swelling of the parts about the trunk of the right trigeminus. Of the other cases I took no notes.

The two instances now related differ chiefly in the circumstances attendant on the degree of the affection. In Mr. G., the local pressure appears, from its actual

symptoms, to have been more violent, in consequence of which the diminution of motion was greater and more extensive, and was accompanied with some diminution of feeling. On the other hand, in Mrs. T. the pressure on the nerve was only sufficient to produce, first, a diminution of voluntary motion, and irritation and pain of certain parts supplied by the nerve; and, 2dly, a deprivation of the sense of taste. The first of these effects exactly accords with what occurs in sciatica, paraplegia, and in mechanical experiments on nerves; and the second will be easily understood, when it is considered that the organ of taste is supplied by nerves which are derived from the third or inferior maxillary branch of the fifth pair. As in this case the tongue had lost none of its power of voluntary motion, it follows that this power is derived from other nerves; which nerves may be the first branch of the eighth pair or glosso pharyngæus, and the ninth pair or laryngæal.

As there was no difficulty of moving the eyeball itself in any direction, it is probable that the ophthalmic branch of this nerve was not affected.

Affections of Hearing.—Deafness, merely an undue Fulness of Vessels.—July 18, 1814. Miss S., a maiden lady, nearly fifty years of age, had been for many months extremely deaf in both ears, when I was called to visit her. She was then labouring under great swelling of the liver, together with jaundice, ascites, anasarca, and an almost total want of urine. After three or four days of slight occasional delirium, she died. During the twelve hours imme-

diately preceding her death, her hearing returned so as to be as acute as in those who hear best in perfect health.

Deafness cured by accidental Hæmorrhage.—January 2, 1808. Mrs. M., aged seventy-six, had been for many years affected with great noise in her ears, attended with deafness, which was not always alike, and scarcely existed when she was in a carriage. She had also been long subject to a cough, with intermitting pulse, and occasional shortness of breath, which obliged her frequently to start up in the night, through fear of suffocation. Besides these complaints she had now and then slight swelling of her legs, accompanied with paucity of urine.

Thirty years before this history of her symptoms, an issue had been made in the inside of the left arm, about the middle of the humerus, which spread very much, and about the latter end of October 1807, in a violent fit of coughing, opened into a branch of the humeral artery, from which a hæmorrhage immediately took place, and continued for nine hours, amounting to at least thirty ounces.

Immediately the cough and deafness left her, and she ever since hears as well as other persons.

Deafness from Vehement Noise.—I was told by that excellent officer, Lord R., that he was almost entirely deaf for a fortnight after the battle of the 12th of April, 1782, in which his ship, the Formidable, fired eighty broadsides. And another gallant officer, who commanded a ship of war at the attack off Copenhagen, has, I believe, to this day, not reco-

covered his hearing, which in a moment he almost entirely lost by the report of a cannon near which he was stooping.

Vitiated Smell.—Febrile and catarrhal affections very much change the quality of smells; and even create smells, for which there is no exciting object or external cause. In a febrile cold accompanying a swelled face, waking in the night I was alarmed by a strong smell, of confined smoke, exactly similar to that which adheres to the skin of a pig which has been singed. I sat up in the bed, and then perceived neither any smoke in the room, nor any smell. When I again lay down in bed, the smell returned. I soon went to sleep, and in the morning perceived nothing of that which had before alarmed me. The next night, immediately on my lying down the smell again occurred, and ceased, as before, on my sitting up. After this night it returned no more.

Vitiated Smell.—Rev. W. M., aged between thirty and forty, who had for a considerable time been subject to that series of complaints which is called nervous, amongst which were depression of spirits, and incapacity of attention for any considerable length of time together to any desired object, had pursued the stimulating means in fashion for such disorders, with the usual want of success; when, by my desire, he had recourse to low diet, and muscular exertion, from which he derived great benefit. He was, however, continually urged by persons about him to deviate from the necessary plan, before its success could be well established.

With regard to this gentleman, there are the two following curious circumstances. A few days ago, while sneezing, he felt a sudden pain on the right side of his head, and immediately was seized with a loss of the power of motion on the opposite side, so that he fell on his elbow against a chair, but in a moment recovered himself, and has ever since remained free from the complaint.

The other particular is this. For about a year past, whatever smell he first perceives in the morning, that smell continues the whole day, notwithstanding he blows his nose very frequently, and often attempts to overcome the impression by other stronger smells, as that of Abrotanum mas, &c. There is a similar disposition, though in a somewhat inferior degree, with regard to ideas, some one of which, after having first occurred in the morning, is apt to predominate through the whole day. Both these last peculiarities have, however, been lessened since the bleedings which, by my direction, he has undergone.

Loss of Smell.—June 14, 1813. Mr. G. lost his smell in consequence of a fever twenty-four years ago, and has never recovered it except so as to have occasionally a momentary sensation. He breathes well through the nose, in which there is no stuffing, or other disease. His taste, also, is very obscure.

False Sensations from Affections of the Brain or Organs of Sense.—Smell.—A stunned feeling in the head is often accompanied, whether it arises spontaneously, or from a blow on the head or forehead, with a smell as of something burning.

Mrs. L., upwards of fifty, who was highly nervous, or had strong marks of determination of blood to the vessels of the head, had for many weeks a most disagreeable smell of smoke or burning continually in her nostrils, and this went to such an extent as entirely to destroy her comfort. Many local remedies had been tried, before I saw her. It occurred to me that it was an instance of false impression, that is, of an internal impression occurring without an external object to excite it, and accordingly in a few days I removed it by blood-letting and refrigerant medicines. In proof of the cause, this Lady, though she then got well, a few weeks afterwards became insane, and in that state, under other care, died.

In Mr. P., with all his joints disorganized with old gout, and subject to violent affections of the chest, and various irregular determinations, there was for many months a similar complaint.

Affections of Sight.—Darkness before the Eyes.—After violent fatigue, more especially when accompanied with fasting eight or ten hours, which has often happened to me, and now, Sept. 26, 1808, after having had violent diarrhœa succeeding great pain in the bowels last night, preceded by pyrosis, I have frequently experienced a sudden failure of sight. The general sight did not appear affected; but when I looked at any particular object, it seemed as if something brown, and more or less opake, was interposed between my eyes and it, so that I saw it indistinctly or sometimes not at all. Most generally it seemed to be exactly in the middle of the object, while what

my sight comprehended all round it, was as distinct and clear as usual; in consequence of which, if I wished to see any thing, I was obliged to look on one side. At other times, though much more rarely, the cloud was on one side of the direct line of vision. After it had continued a few minutes, the upper or lower edge, I think always the upper, appeared bounded by an edging of light of a zig-zag shape, and corruscating nearly at right angles to its length. The corruscation always seemed to be in one eye; but both it and the cloud existed equally, whether I looked at an object with one or both eyes open. When I shut both eyes, covering them with my hands so as to exclude all rays of light, the corruscation was still perceptible in the same place, and what had been a semi-opake cloud appeared lighter than the rest. When I raised or lowered the axes of my eyes, or squinted, the cloud and corruscation, though it moved its place, still bore the same relation to the object at which I looked. In this way they would remain from twenty minutes sometimes to half an hour, the cloud lessening as the corruscation continued, and the latter sometimes rather suddenly going off. They were in me never followed by headach, but seemed evidently connected with the state of the stomach; for though they sometimes occurred without any feeling of indisposition at the time, either there or elsewhere, they generally went off with a movement in the stomach, producing eructation; and any thing which produced a glow in the stomach, with eructa-

tion, and perhaps without it, such as brandy, hot water, &c. always hasten their departure.

Similar affections have not unfrequently occurred to other dyspeptic patients, more especially to those who with dyspepsia were subject to occasional gout; not very unlike the darkness which occurs after a person has looked at the sun. I have known an instance of obfuscation of sight of many hours duration in a patient after an epileptic fit, from which he was otherwise perfectly recovered. In this case the patient could see only a perpendicular half of any object at which he looked. He was not subject to dyspepsia.

These cases must be carefully distinguished from some of those in which persons have musci volitantes or motes, which are particularly perceived in very strong sunshine; and which, in some instances, have remained without any change for forty or fifty years.

Strabismus from Nervous Affections.—In Miss H., a young lady affected with the usual train of nervous symptoms, as palpitation, pain in the left side, globus hystericus, various uncomfortable feelings about her head, inability to walk, costiveness, &c. there was often double vision from strabismus, occasioned by the left eye turning involuntarily towards her nose. She recovered by general and topical blood-letting, the abstraction of stimulating food and drink, aperients, the use of saline and nauseating medicines, and a return to habitual exercise of the body by means of its own muscles.

Seeing Objects single probably the Result of Experience.—In Captain —— a paralytic stroke

produced *strabismus*, in consequence of which objects were seen double, but by degrees approached nearer and nearer to each other, so as, when I saw him, to be almost come into one, though the state of strabismus remained the same.

Colours before the Eyes.—June 16, 1812. Gen. O., aged about seventy, for some days past, just before the first lighting of candles in the evening, and for an hour on first waking in the morning, sees all white objects of a deep orange colour, approaching to scarlet. His eyes have the natural appearance. He is affected with occasional depression of spirits, and shedding of tears on slight occasions; has violent pains in his legs and the bottoms of his feet, without any swelling or appearance of inflammation; and four or five years ago had something of paralysis in the right hand, suspected to have arisen from lead. He is very weak, has little appetite, is free from fever, headach, giddiness, or any flatulency or indigestion, and his bowels are tolerably open.

Affections of the Eye, &c.—In Mrs. C., a pain over the orbit, especially on the right side, comes on pretty periodically about ten or eleven o'clock, and lasts generally through the day, and often the night. It has occurred for several months together at different times for twenty years, and gets well without apparent effect from any remedies, sometimes affecting the discharge from the nose, always producing a stuffing and thickening of the schneiderian membrane of the right side chiefly, especially at night, on lying down, unaccompanied with any degree of

fever, or marks of affection of the frontal sinus, but affecting the eye with deep pain, and watering, during the fit.—She was cured shortly by Arsenic.

Affection of one Eye.—Mr. G. V., a midshipman, was for four years employed in the signals, in which his constant duty was with a telescope to look out for distant objects. This he always did with his right eye, shutting the left. The consequence is, that the right eye is become so near-sighted that he cannot read without a concave glass farther than about a foot from that eye, while with the other he can see at the distance which is common to other persons of the same age. [1815.]

Effect of Heat or Light on the Retina.—Oct. 23, 1812. Mr. Le G., a West-Indian, of middle age, a free liver, and accustomed to an indolent life, after having been for four hours on horseback, exposed to a burning sun, began almost immediately to perceive a dimness of sight in his right eye, which rapidly increased, so that at the end of a fortnight his sight was entirely lost. There was never any pain or inflammation in the part; and now, eighteen months after the commencement of the malady, though he is perfectly blind in that eye, there is no appearance of disease in it, except that the Iris does not sufficiently, or equally with that of the other eye, elongate itself on exposure to light. It still, however, continues in some degree to obey the influence of that stimulus.

Amaurosis cured.—Mrs. P., aged twenty-eight, a married woman, who had been once before pregnant, had been subject to pains in her head, and about a

year before had spit blood occasionally. Her sister was subject to epilepsy, and her brother had been long affected with violent determination of blood to the head, producing pain, a sense of fulness, and twice epilepsy, under which I had attended him. On the evening of the 17th of November, 1801, while at public worship in a very crowded chapel, she was seized with a pain in the back part of her head, which continued for one or two days, and was then followed by some dimness of the right eye, accompanied with occasional giddiness of her head. The eye became gradually worse, and on the 26th of November the other eye began also to be affected. I saw her first on December the 3d, when she was totally unable to distinguish a candle in a dark room. There was no apparent disease of the coats or humours of the eyes, but the pupils did not contract regularly on the admission of light. She was probably pregnant, not having menstruated for nearly three months. Three leeches were ordered to each temple, and a grain of Digitalis to be taken twice a day.

Dec. 16. Pulse 84, and hard. Head occasionally achs. No giddiness. There is now a glimmering of sight in her right eye; but the left pupil has hardly any sensible contraction on the approach of light, and she cannot distinguish the fire with it. She has taken no Digitalis for four days past.—Admoveantur tempori sinistro hirudines iv.—Rep^{r} Digitalis.

Dec. 22. On the 20th was very sick from the pills, which she has ever since discontinued; but has had no vomiting. The leeches drew well. Her left

eye began to grow better on the 20th, and the pupil now contracts tolerably well from light. Pulse 96, and full. She had some headach to-day; and is costive.

℞ Aloës Socotorinæ.
Pulveris Foliorum Digitalis āā gr. j.
Syrupi q. s. sit. Ft. Pilula, meridie et horâ somni quotidie sumenda.

Dec. 30. Pulse 80, and somewhat irregular. An opening draught taken this morning operated well, and the bowels have been uniformly open twice a day. She has some degree of sickness, which she does not attribute to pregnancy, as it did not occur when she was before pregnant. She has still occasional pain about the occiput, and frequently a considerable degree in her stomach, which prevents her sleeping. Her eyes are much better; and the pupils contract naturally and equally. Pergat.

January 9, 1802. Pulse 84, and strong. She has no sickness or giddiness, and for a week has been free from headach. Bowels regularly open. Her eyes are perfectly well, so that in my presence she has just threaded a needle of the very smallest size.

During the whole administration of the Digitalis, the urine, which was uniformly saved, never exceeded two pints and a half in twenty-four hours; and on the 20th, 21st, and 22d of December, when her left eye began first to mend, and she was sick and costive, the quantity was only one pint and a half daily.

Affection of Sight.—Mrs. T., aged about fifty, moderate as to flesh, but averse to exercise, has long been subject to the following set of symptoms. The

incidence of a strong light, or the attempt to read small print, soon brings on a pain in the ball of the left eye, which extends to the posterior part of the left parietal bone, about half way between the sagittal and squamous sutures. It is of a dull heavy kind; does not occupy a space much larger than that of a shilling; and after having for some time continued, is followed by sickness, with frequent straining to vomit. These symptoms often continue several hours, and recede without any assignable cause.

The sight is more obscure in that than in the other eye; and the eye itself turns rather outwards, when she looks at an object with both eyes open, but becomes straight when in so doing she shuts the other eye.

Her appetite is good, her bowels are uniformly open once or twice a day; and she is free from flatulency and other symptoms of dyspepsia. The pulse, both in the radial and carotid arteries, is natural as to frequency, but preternaturally strong.

Finding that this lady could not be prevailed on to lose blood in any manner, I gave her Sulphate of Zinc with dried Squill, of each one grain thrice a day; and urged as much exercise as she found herself able, or disposed, to take. I likewise precluded the use of fermented liquors. These measures were tolerably well pursued; and at the end of three weeks Mrs. T. was as much better as could reasonably be expected under the omission of the more powerful remedies.

Affection of Vision from disordered Brain, the Intellects being free.—Admiral W., an old man, had long been subject to epilepsy, which in the process

of the disease usually occurred several times during every night, though without his knowledge of the nature of his complaint. At length, after a severer attack than usual, his vision was affected in the following way. Sometimes the outline of objects appeared to be marked by flames of fire, which also spread themselves over the objects themselves. At other times objects appeared different in form and colour from the reality. Thus his fingers seemed to him exactly to resemble tallow candles; and at another time appeared covered with pink coloured gauze, with darker spots in it. A plain piece of white paper also appeared spotted with different patterns, as of flowers. Shutting either eye made no difference in these respects; and the false perception took place equally by day light or candle light, but ceased when he shut both eyes. He had no strabismus, or any external appearance of disease in his eyes. He was perfectly conscious that all this was optical deception, and his mind was in no respect deranged, except that his memory was somewhat impaired, and his ideas were slow in their course.

For some months previously to the period which I have specified, the flashing had occurred without false colours; and three days after my visit, blood having been taken away, and refrigerant medicines employed, Admiral W. saw objects much more naturally, though still not without some of the patterns and with slight flashings.

Spectres.—Mrs. Thos. C., aged eighty-six, thin, able to exert herself in walking, and enjoying a free

use of all her faculties, was at various times, for eight or nine years, subject to violent fits of vertigo, which were followed by sickness and vomiting, and required for their relief not only brisk purging, but often general blood-letting and the application of leeches to the temples, in consequence of which the attack would subside at the end of one, two, or three days. On other occasions this patient had slight febrile attacks, without any specific local malady, which were removed by purging, and Citrate of Potash with Antimony.

On these occasions there was no evidence of any indigestion or other disorder of the liver or alimentary canal, except some disposition to costiveness; but as I had reason to suppose that the patient took somewhat more food than was consistent with her exercise, I recommended the habitual use of Extractum Colocynthidis compositum at night, and once a week some Submuriate of Quicksilver at bedtime, followed by Magnesia, Rhubarb, and Tinct. of Senna the next morning, so as to produce free purging. From these measures so much relief was obtained, that during the space of four years, the patient experienced only one or two slight returns of the disease.

In the beginning of the month of April 1813, after several days of extremely hot weather, she was seized with some confusion of feeling about the head, unattended with either vertigo or sickness, but accompanied with preternatural quickness and strength of pulse, and dryness of tongue. These symptoms were alleviated by the usual aperient, but after two days were succeeded by the following phenomena. By

day light, whether she was in bed or up, white objects, such as the quilt or curtains of her bed, seemed to have on them a red network. A mahogany wardrobe was chequered with moving squares; and the same appearances seemed to occur whether her eyes were shut or open. Sometimes during the day, and while she was out of bed, a shower of black spots seemed to be falling down before her eyes; and if she looked in a glass her eyes appeared to her contracted and distorted. All this, however, was trifling in comparison with what occurred at night, when, by candle light, with her eyes wide open, she saw trees and flowers, and faces; many of which were of the most hideous kind, rapidly passing before her. These appearances continued for several days, and though she was conscious that they were delusions, and remarked that at a certain period they would certainly have been considered as spectres, yet they were accompanied with great mental agitation and depression of spirits. As she was free from flatulency, and aperient medicines had no effect on the complaint, her stools being of a natural colour, blood was taken from the arm, and exhibited somewhat of that appearance which is called inflammation. Relief having been obtained neither from this measure nor from the exhibition of Asafœtida, leeches were applied to the temples, and draughts of Citrate of Potash with Tartarized Antimony were exhibited. From this period, Mrs. C. became better, and in two days lost all the visions, but continued for a few days afterwards to have a pulse of 80 in a minute, though

with no loss of appetite, or any other symptom of fever.

Affection of Vision.—Mr. S., aged seventy-three, used occasionally to have glimmering before the eyes, when his stomach was prone to eruct with unusual violence. He was of a gouty habit, though with no regular fit for nine years, with irregular bowels, usually costive, but occasionally purging, and great flatulency, though with good appetite, which he greatly repressed. In the left eye from boyhood there was a defect of vision, not apparently owing to any difference of form, for it was not to be relieved by any glass, but a kind of dimness. May 10, 1809, from seven till nine o'clock P. M. after much difficult eructation, with a distended stomach, objects appeared to him of a very deep yellow, nearly orange colour, speckled with scarlet and black, and white objects of a still brighter tint. When the eyes were shut, there was a sensation of a round object first brown, then of a deep fine blue, like a sea anemone, the colours always moving. It continued for two hours and gradually diminished, ending at last by degrees with a brownish colour at the outside of the right eye. The next day it lasted for an hour, bright green mixed with yellow, when the eyes were open, when shut as before. Eructation less difficult. He had taken a teaspoonful of Tinct. of Rhubarb and Salvolatile in water. This state continued four days, the attacks only commencing in the afternoon when he took a walk, which however did not appear to fatigue him.

Mr. L., several days before he died, with consider-

able affections of the head, though not confined to his bed, just at and after sun-set, saw every thing purple by day light.

Mrs. A. C., from no assignable cause, often sees white objects of a very bright blue colour by light.

Affection of Sight from Paralysis.—Admiral G., aged between sixty and seventy, who had sailed round the world with Captain Cook, and the greatest part of whose ancestors had died of apoplectic and other complaints in the head, was, in the year 1810, affected with sciatica, in which the pain, as is usual in such cases, extended itself down the leg. For this complaint a blister was applied to the leg, and produced an ulceration which became extremely troublesome, continuing for many weeks, and extending itself, with superficial inflammation to the skin of the neighbouring parts. He had also been for a considerable time subject to vertigo, and other uncomfortable feelings about the head.

The leg was cured at Bath, by Mr. Norman, jun. and the complaints in the head were greatly alleviated under my care by restriction of diet, and copious evacuations of various kinds. In this state he left Bath, in the month of August 1810; after which he took very violent exercise in fox-hunting, and relaxed in his attention to diet.

At the latter end of December, while exposed to considerable cold, he was suddenly seized with a sensation of chilliness all down the left side, accompanied with confusion in his head, and such a loss of power in the left thigh and leg that he fell down.

From this attack he soon recovered; but two days afterwards, he had a much more severe attack of the same kind, in which, with greater affection of the head, he lost the power of motion and sensation in the arm and leg of the same side.

At the end of a fortnight he had tolerably well recovered the power of voluntary motion; but the sensibility returned more slowly.

Ever since that period to the present time, December 1812, his vision has been impaired in the following manner. He sees as well and as widely as usual with the right eye, but with the left he can see no object which is situated to the left so as to form an angle of more than twenty-two and a half degrees with the axis of the eye, in whatever direction it may happen to be turned. There is no morbid appearance in the eye itself, and the pupils of both eyes contract naturally and equally.

He has frequent vertigo, and pain in the left temple and over the forehead.

The pulse in the carotid and radial arteries is natural.

Squinting.—It may be observed with regard to this defect, *first*, many persons, let them see ever so well, have naturally an unequal distinctness of vision with both eyes; and therefore they generally use one eye more than the other, yet few persons squint. And this is the case, whether the difference arises from a variation in the focal distance, or from some dulness of sensibility in the retina. Mr. T. cannot see to read a book with his left eye, but

does it distinctly with his right; and he cannot distinguish the features of a person at three yards distance with his right, but at that distance has very accurate vision with his left. The fact is, that his right eye is very young or near sighted, and his left eye somewhat old or long sighted for his age, which is fifty. This has been the case as long as he can remember, but he has not the least tendency to squinting. So in the incipient state of amaurosis or cataract, the sight of one eye gradually becomes impaired; and yet among the numerous examples of these maladies which I have seen, I do not remember squinting to have occurred in one single instance. *Secondly*, when a person who squints looks at an object with the better eye shut, he directs the axis of the other rightly, and sees with it as well as with the former. It is, therefore, evident that the defect which produces squinting, is not in the passive organ of sense; and from the following circumstances it is probable that it is connected with the state of the powers moving the eye. 1st. If the father or mother of a family squints, the majority of the children have the same defect. Now this does not usually arise from hereditary defect, for they do not acquire the habit, if taken from their parents while infants. They squint merely from imitation; and this is so true, that I am acquainted with a family, one or more of whom squint from living with their father, one of whose eyes was lost and much deformed by an accident before these children were born. 2dly, I have seen squinting produced in the eyes of a girl by a violent inflammation, which made their move-

ments painful. 3dly. Many persons have been cured of squinting by habitually for a long time covering the strong eye, so as to oblige them to use the weak one. This was the case at the end of three weeks, with the girl just mentioned, though the defect had continued for several months after the inflammation had been removed. One does not well see how these facts accord with any difference of susceptibility of vision in the two eyes; but they meet with an easy explanation on the principle of inequality of action, when that inequality is produced by pain or weakness in the muscles directing them, and therefore by averseness or incapacity. Although, therefore, it may be true that a dulness of sight in one eye may produce some defect of vision, it by no means occasions that confusion which Bichât asserts. Because persons in general shut the unassisted eye when they look with the other through a common lens, it by no means follows that those in whom the sight of one eye is affected, would see more distinctly by shutting that eye. In fact we do not observe that they do so, unless using the bad eye gives it pain.

The cases of Paralytic Affections, as in Mr. C., Mr. G., and others, and those of Hydrocephalus, remain to be considered.

Squinting cured.—Master S., aged one year, son of Sir J. W. S., while cutting the molares on the left side, which happened before cutting any of the incisores in the lower jaw, was perceived, after a violent fit of crying, to squint with the left eye, which turned preternaturally inwards. This took place in the

beginning of September 1810; no person about the child having any similar infirmity.

When I saw him a month or five weeks afterwards, I recommended that the eye which was well should be constantly covered during the day with a black ribband. This mode being difficult to accomplish, on account of the flimsiness of the bandage, Mr. Trowbridge, apothecary to the family, contrived a pair of goggles, which completely covered both eyes, but allowed them their free motion. That which covered the good eye was perfectly darkened, but in the centre of the other there was an aperture about the size of a pea.

These goggles were worn by day only, whether he slept or waked, for six weeks; at the end of which time, the child being seized with a violent inflammation in his bowels, they were discontinued. His eye had however regained its proper power, which at this time, July 1812, it continues to possess.

A girl, about the age of puberty, had an inflammation in both eyes, which produced a disposition to suppuration in the tarsi. When she recovered from this complaint, she was found to squint in a great degree, one of the eyeballs turning inwards. Observing that when the good eye was shut, the axis of the other was properly directed, I ordered that all vision by means of the former should be interrupted by the use of a proper bandage constantly worn. This was done; and at the end of three weeks the eye resumed its just direction; which now, several years afterwards, it fully retains.

A girl, aged fifteen, had violent inflammation in her eyes for several weeks, which ended in Strabismus, in which the axis of one eye was directed inwards. I had the well eye continually covered, and in one month the bad eye returned perfectly to the natural state.

Squinting.—May 1, 1812. Master de C., one of whose sisters, much older than himself, has long squinted, had a few days ago a stie on the upper lid of the left eye, for which that eye was for a week or ten days kept constantly covered. The covering was then removed, and a few days afterwards, he was observed to squint with that left eye, the pupil of which was turned preternaturally inwards. In order to cure this affection, it had been recommended that a green blind should be placed over the outer half of that eye ; a measure, from which, it will readily be believed, no benefit has hitherto arisen. When the right eye is shut, he sees well with the left, the axis of which is properly directed.

Let the right eye be kept constantly covered through the day, and uncovered at night when he goes to bed.

This plan was continued only for two or three days, and was then abandoned, from some apprehension that it would cause him to squint with both eyes. On the 22d of May, it was resumed.

June 21. The plan which was recommended has been very uniformly continued till the present time, when the circumstances are as follows. While the right eye is covered, he sees well with the left, the

axis of which is straight, the pupil moderately open, the aperture of the eyelids natural, and the eyebrows sufficiently elevated. When he first opens the right eye, the light in general appears offensive to him. Both pupils immediately contract; the left much beyond its former degree. I find, however, that this circumstance is common to other persons, who in the same degree of light, and looking at the same object, have always the pupil more dilated, while one eye only is open, than when both are so. That the light, however, is unpleasant to him, farther appears from his immediately depressing both eyebrows; and this being the case more particularly on the left side, in which he also half shuts the eye, while the eyeball is turned more or less inwards, one may reasonably infer that the light is most unpleasant to the left eye. After some time, the eyebrow ceases to be depressed, and the eye assumes a straighter direction, so as sometimes to be wholly without squinting. This, indeed, seems to be always the case when he looks at an object which is very near, while, on the contrary, when he looks at a distant object, he always squints. General health good.

June 29. The covering of the good eye has been continued, but not so regularly as could be wished, all the females of the family apprehending bad consequences from the measure. The squinting seems less constant, and it is singular that the boy seems to have something like voluntary power over the muscles of the affected eye; for when the ball of it is turned inwards ever so much while the right eye is directed

forwards, if I desire him to look stedfastly forwards the left eye usually takes the proper axis. It appears, indeed, that there is some weakness in the abductor muscle; for though when he looks at an object very obliquely to the right, the ball of the left eye is turned farther inward than that of the other, when he looks obliquely to the left, the axis of the left eye is not directed sufficiently outwards. At the period of the last report there was a little disposition to redness in the eyelids, which might have given an undue degree of sensibility to one or both eyes. That state is now removed, and the circumstances which appear to-day seem to arise not from any undue sensibility, but from a weakness of the left abductor muscle; for which no remedy appears so promising as giving it strength by the continued necessity of using it.

August 14. In consequence of this theory the right eye was covered for three weeks, the effect of which was some degree of inflammation in the right eyelids; and when, in order to relieve this, the bandage was removed in the day, as it had before in the night, it was found that the squinting in his left eye was perfectly cured; but now altogether transferred to the right, in which, however, it did not take place in the same degree as in the former. He is now from home, but I find that he does not always squint, and that when he looks at you stedfastly and at a moderate distance, as at two yards, both eyes are rightly directed.

As it seems that morbid sensibility as well as weakness of the muscles of the eyes are produced by

covering them, I have recommended that he should use the cold bath thrice a week, and have suggested the application of a projecting substance like a card on the middle of his forehead and the upper part of his nose, so placed that when he looks at near objects, a little on one side, with his right eye, he shall not be able to see them with his left.

October. None of the measures recommended have been employed, and the squinting continues in the right eye, though the axis is not turned inwards so much as it was. There is certainly some morbid sensibility with regard to light; for when he directs his eyes towards that which is strong, he depresses the eyebrows, and partly shuts the eyes. There is not, however, any appearance of disease in the coats of the eye, and the pupils seem to contract equally. It is evident, however, that there is some relative or absolute weakness in the right abductor muscle; for though, when his left eye is shut, the axis of the right is properly directed towards objects which are either somewhat on his left, or immediately before him, he seems unable to direct it outwards, or to the right, as far as he can the other eye to the left.

In this case, not being able to obtain a due regulation of the means, I was obliged to abandon the patient to some degree of Strabismus in the eye last affected.

Miscellaneous.—*Affections of the Maxillary Branch of the Fifth Pair.*—Mrs. C., aged between forty and fifty, fat, and unaccustomed to exercise, had

been used to bathe in our hotbaths for a rheumatic pain in the left shoulder. One day in August, while bathing in the open bath, she felt the wind blowing cold on her face, and was soon afterwards seized with a numbness, or diminution of sensibility, in the right cheek, over a space of about three inches square, bounded above by the zygomatic process, forwards by a line drawn down the nose and upper lip, and below by a line continued backwards in the direction of the aperture of the mouth. There was not the smallest degree of pain in the part, or of headach or giddiness, but the sensibility was so diminished, that she scarcely felt the effect of its being strongly pinched. This insensibility, which continued several weeks, was evidently confined to some of the extremities of the superior maxillary branch of the fifth pair of nerves.

Local Affection of Nerves.—In Mrs. S., whose fore-finger is in a great degree Insensible, and partly inobedient to the will, arising from an inflammatory affection of the shoulder, scapula, and neck, pressure on the left of the spine, about the lowest vertebræ of the neck, produces pain in the part, and at the same time an instant tingling in the whole hand of the same side, except the thumb.

Affection of Portio Dura, Seventh Pair.—Mrs. H., Nov. 8, 1804. Palsy of the right side of the face only, preceded by pain in the ears, and inflammation of the meatus auditorius on the right side. There is a resemblance between this case and sciatica, lumbago, and palsy of the lower extremities from pressure on

the spine. Here is pressure on the fifth pair of nerves, or on the portio dura of the seventh.

Paralysis of Fingers from Affection of the Brain. —September 5, 1812. Miss F., a young unmarried lady, fat, was about nine weeks ago thrown out of an open carriage, in consequence of which she bruised the whole of her left side; but appeared, at the time, to suffer no other injury. In about a fortnight or three weeks she began to feel some numbness of the fore-finger and thumb of the left hand, and an inability to shut her hand, and considerable weakness and diminution of the voluntary power of her left leg. These circumstances continuing, she was seized on the morning of the 22d of August, with swimming in her head and sickness, for which she took an aperient, after which she vomited, and became better. The next morning she was affected in a similar manner, but about noon, the weather being very warm, walked out for nearly two hours, and was then suddenly seized with a temporary loss of sense, and some increase of weakness on the left side.

In addition to these symptoms, I found on the 3d of September, when I first saw her, that she had omitted to menstruate at the last period, and that her bowels were habitually costive and difficult to move. I observed a considerable degree of fluctuation in her ideas, and a preternatural versatility and incapacity of attention. There was a sort of rolling in her eyes, which was unusual at least in other persons. She walked in a somewhat tottering manner, was unable

to shut her fingers, complained of some stiffness on the left side of her throat, and once or twice in inspiration gave a short snore. She denied that she had any complaint whatever in her head. Her pulse was quick and rather full, and was preternaturally strong and full in the carotids, rather more on the right than the left side. Subsequently to the accident, her bowels were much disposed to costiveness.

I ordered twelve ounces of blood to be taken from the arm. The blood flowed with difficulty, but the whole was taken. It was of a very dark colour, and strong texture, but shewed no separation of coagulable lymph.

The effect of this bleeding was immediately to enable her to shut her fingers, to pick up a pin, and to feed herself at dinner, all of which she had for several weeks been unable to do. Her power of walking was also greatly improved. Still, however, there remained some weakness of the side, and some numbness of the thumb and fore-finger. She left Bath on the 6th, under an antiphlogistic regimen, and the use of purgatives and Squills.

Morbid Sensation, Coldness and Heat.—A part which feels warm to the touch often to the sensations of the patient is extremely cold. This may arise from two causes: 1st, it may be that what is called coldness is merely a sensibility to cold air, &c. while there is no actual coldness. And 2dly, though the skin may be warm, the internal part may be cold, as before the gout, &c., when external heat seems to have little power of restoring warmth. And *vice*

versa, the hand, foot, or any other part, may be cold to the touch while it feels warm, because the internal part is warm.

Standing before the fire with one's back, and eating, both produce a feeling of coldness; the first probably by drawing the blood to the surface, and so robbing deeper parts (hence chilliness), and the latter by drawing blood to the stomach, &c., and so cooling the muscles.

Difference as to the Nature and Causes of Pain and Soreness.—*Pain* is an actual sensation. *Soreness* is the capacity of it on slight stimulus. The former always seems to accompany the latter; but the latter may exist without the former.

[May 28, 1808.]

Pain diminishes the action of the heart, and sometimes even brings on coldness and fainting, and therefore the circulation of the blood in the extreme vessels. Hence in inflammatory affections pain is beneficial, by diminishing that impetus which constitutes, or at least is essential to, inflammation, and therefore tends to cure the disease; just as fainting cures hæmorrhage.

Pain (not from a cutting instrument) ceasing with faintness, is a proof that it is owing to arterial momentum.

Pains themselves, even without fever, increase at night, and become better about five in the morning.

Pain producing Œdema.—In Mrs. P., and others, a violent pain of her head, especially on the right

side, probably from costiveness, was accompanied with œdematous swelling of the right eyelid.

Pain and Hæmorrhage from the same Cause.—In Mrs. T. C., with a pain on the left side of the head, followed by epistaxis, the discharge of blood occurred from the same nostril.

Sciatica.—Causes of Elongation of Extremity.—In sciatica, or hip disease, a man at first, feeling great pain from bearing on the affected side, leans to the other; whence it happens that the spine of the ilium on the affected side is higher than the other, and the whole extremity, therefore, appears shorter, the knee at the same time being rather bent in order not to touch the ground. As this disease advances, especially if the patient remains in bed, that side falls, because the muscles which draw it up producing pain in it, are not used, so that it lengthens, that is, the spine of the ilium falls, and the limb with it, the knee being still more bent, while the other side is proportionably drawn up. The cartilages of the vertebræ follow these two states, yielding conformably, without organic disease or caries. Perhaps there is softness from absorption without ulceration.

Sciatica.—I recollect a case in which a patient had long suffered great pain on the thigh, and outside of the knee and tibia, whom I much relieved by leeching behind the trochanter, but whom the sagacity of Mr. Astley Cooper enabled him very speedily to cure by drawing blood in the course of the same nerve on the outside of the thigh.

That the pain about the outside of the knee, and

ankle, and leg, in *Sciatica*, depends upon a sensation propagated from above downwards, and is not a permanent affection of the part, is evident from this, that in Mr. L., and others, pressure on the affected part of the nerve itself, behind the great trochanter, produces pain in the ankle and down the knee and leg, where it is usually felt without that pressure, and much aggravates it where it happens to be present. The pressure also produces tingling down these parts, as in the little finger from pressure on the nerve in the elbow.

Progress of Lumbago or Sciatica.—In Mr. F., the first symptom was numbness on the outside of the same ankle and foot, and the pain gradually began there and ascended upwards.

Tic Douloureux.—June 12, 1813. Major B., moderate in flesh, and above the middle size, whom I attended several years ago under gall-stones, and who was never affected with gout, or eruptive complaints, began on the 6th or 7th of this month to labour under a pain in the upper and lower jaw, situated principally in the sockets of the teeth, and chiefly, but not wholly, affecting the left side. It extends occasionally to the posterior angle of the left lower jaw, and up to the antrum maxillare of the same side. The pain is of a burning and throbbing kind, and is often extremely violent, especially during the night. There is no swelling in the gums, and the parts are so far from being tender, that strong pressure or friction on the lower gums diminishes the pain. It

is severely aggravated by the application of cold water within the mouth. Most of the teeth are gone; there are none decayed on either side of the mouth, and pressure on the teeth gives no pain. Pulse 76, and soft. Skin cool. Tongue clean. Bowels open.

He has ineffectually used Tincture of Myrrh, and taken aperients.—Let the gums be scarified.

℞ Extracti Papaveris, gr. ij.
- - - Conii, gr. ix.
Aquæ distillatæ q. s. sit. Ft. Pilulæ tres æquales.
Sum^t unam horâ 6tâ. p. m. horâ somni, et cras horâ ximâ ante meridiem.

June 13. The gums have not been scarified. He passed a much better night, but has had a very severe aggravation of pain to-day from twelve o'clock till three; and the pain has chiefly affected the fore part of the lower gums on the left side, where there are no teeth. He is able to eat only spoon-meat. No motion. Pulse 75, and soft. Skin cool.

Rep^r Pilulæ cum Extracti Papaveris gr. iij.

June 14. His night has been tolerably quiet, but from eleven o'clock till now he has suffered great pain, which has been confined to the left side, and has chiefly affected the alveoli extending upwards to the zygoma and lower part of the orbit. He has no pain in the roof of the mouth, and is not hurt by speaking, or sucking in lukewarm fluid food. Bowels open once yesterday, and once to-day from two drachms of Epsom salts. Tongue clean. Pulse 75, and soft.

℞ Liquoris Arsenicalis, gutt. lx.
Aquæ Rosæ ℥ij.

Aquæ fontanæ, ℥iv.
Sacchari puriss. ʒj. M. Sumᵗ coch. duo majora hac nocte horâ somni, et cras primo mane et meridie.

June 15. He took last night three grains Extr. of Poppy, but has had no sleep from violent pain in the upper jaw, which increased in the afternoon and continued through the whole night, accompanied with great heat of his skin. Since breakfast, he has been better. This morning he drew for himself one of the Molares in the under jaw of the affected side, which was scarcely loose and is not decayed, though one of the fangs appears to be dead. The operation was followed by a discharge of about two drachms of blood. He has had to-day some flying pains about the head, and about the alveoli of three sound teeth which remain in the left upper jaw, but are not uneasy when touched. No sickness, or motion. Pulse 84, and full.—Pergat.

June 16. He has slept well, and been free from all pain except a throbbing in the upper gums, in the part before described. No sickness, or burning heat. Bowels well open from neutral Salts and Magnesia. Pulse 76, and full.—Omittᵗ medicamenta omnia præter Magnesiæ Sulphatem pro re natâ.

June 23. He has merely continued to take his opening medicine. He has walked out whenever the weather would permit, and yesterday morning went to the musical performance at the Abbey Church, which was hot and crowded; in consequence of which he was affected with some pain across the upper gums

on the left side, which continued more or less through the evening, but did not prevent his sleeping, though it has returned in a slight degree this morning. He has also had some flying pain about the head; and occasionally a slight feeling of faintness. The Sulphate of Magnesia makes him sick. Pulse 100.

He was desired to take some aperient pills; and to take gentle walks.

In three or four days, with no additional means, he became free from complaint.

Tetanus.—August 9, 1816, half-past twelve P. M. A labourer, aged fifty, long in a weak state from pulmonary complaints, on the 3d ultimo, in consequence of the falling of a post on the back of his left leg, had the integuments torn from the tendo Achillis, so as to leave that tendon bare for a length of nearly three inches. He was that day brought to the Casualty Hospital. The skin was brought together by strips of plaster. On the following day every thing seemed going on well; but on the 5th, the plaster being removed, the integuments were found in a sloughy state. A poultice was applied over the whole. On the 6th, a good deal of inflammation surrounded the lacerated parts, accompanied with headach and febrile heat. On the 7th, the inflammation, headach, and febrile symptoms had abated, but the slough had rather spread.

Yesterday, about one o'clock, the sloughed parts appeared in much the same state as before; but the tendon itself had a more opake and silvery appearance

than is natural ; and altogether we entertained apprehensions that tetanus might ensue, although no actual symptoms of that malady had occurred.

This morning, however, he began to be sensible of stricture across the lower part of the thorax, in the direction of the diaphragm, together with tightness about the back of the neck, and some inability of freely opening the mouth, so that he could not protrude his tongue more than half an inch beyond his lips. He had also a good deal of stiffness about his back. These symptoms continue. He has, however, neither headach nor convulsions. His pulse is 80, weak, and somewhat intermittent. Skin cold. A stool at five this morning from an opening draught.

He was desired to take immediately 3 grains of Submuriate of Quicksilver and five grains of Jalap, and to repeat the dose at the end of four hours.

At seven, Dr. C. Parry, Mr. G. Norman, and myself again visited him. He had found the bed extremely uncomfortable, and had been sitting for two hours in a chair. He had taken only one dose of his powder, and it was not till very strong exhortations had been used, that he could be prevailed on to take another, though not without a sort of spasmodic rising in his throat, accompanied with some coughing. He had had no stool. His pulse was 108, and very weak ; his skin covered with a cold sweat ; and the contractions about his neck, jaws, and back seemed somewhat increased. He had no pain or giddiness, but compared the feeling about his head to a tightness or weight.

He was ordered to continue either the powders, or a strong infusion of Senna; and to take, alternately with his medicine, warm brandy and water.

He was, however, unable or unwilling to swallow; the fluid always exciting a sort of convulsion in his throat, whenever he attempted deglutition. During the night he had very little sleep; and at half-past nine on the 10th, began to have convulsions about the face, which was of a dark colour from difficulty of respiration. At ten o'clock he died.

He was opened the next day between two and three o'clock by Mr. Norman.

In the thorax there were marks of severe pulmonary disease; such as pleuritic adhesions, great congestion of blood in the lungs, giving an appearance of solidity like that of liver. The trachea, from below the larynx, had the mucous membrane very much injected with blood, which gave it a more or less damasked appearance; and it was copiously bedewed with a serous fluid. This dark red colour extended into the smallest cells of the bronchia. The lungs, when cut into, had scarcely any appearance of air; but in various parts exsuded thick, concocted mucus.

The pharynx and upper part of the œsophagus had their mucous membrane of a dark livid or purple colour. No other parts were examined.

Chorea.—May 7, 1812. Miss C., aged nineteen, from the time of her birth till she was fourteen years of age, enjoyed good health. For some time previously to that period she began to menstruate, and continued regularly to do so for a year, after which,

for two years, she had a total cessation, but has continued to menstruate in a proper way ever since. Thirteen years ago she had a sister who was affected with St. Vitus's Dance in such a degree as to lose for some time her speech, and for several years the proper use of her limbs. She still continues occasionally to have violent spasmodic affections of different kinds. Between four and five years ago the present patient began to suffer great debility, and shortness of breath, which were now and then accompanied with some degree of chorea, throughout the whole body. This complaint has increased till the present time, varying, however, at different periods, as to its force, and not obtaining any essential or permanent relief from Æther, Camphor, blisters on the head and other parts, a seton in her neck, the cold shower bath, sea-bathing, warm bathing, &c. The muscular motion is catching, irregular, and not accurately under the direction of the will. The tongue and throat are rarely much affected. She often suffers the different modifications of aching, weight, or giddiness in her head; and her sight is always rather dim, and often so much so, especially on walking or riding, that she can scarcely see at all, though she gives no very accurate account of the particular modification of inability. There is some inequality in the direction of the axis of the eyes, and the pupils seem to contract rather irregularly. The pain in her head is over her forehead. Her appetite is tolerably good, but she eats little meat; is flatulent, yet thinks that nothing agrees with her so well as fruit. Her stomach is free

from sickness. Her habit is naturally very costive. Pulse 84, and soft. Skin cool. Pulsation of the carotids full. She has occasional palpitation of the heart; and now and then, like the rest of her family, has had hysterical affections. Urine of a natural colour. She sleeps tolerably well, for the exercise which she takes. Tongue clean, and somewhat tremulous while extending. While at rest, she has no convulsions.

She was bled to ℥viij. The blood flowed freely and had a natural appearance. Her bowels were daily opened by medicines, and the following pills ordered.

℞ Scillæ exsiccatæ, gr. xiv.
Extr. Aloës spic. gr. ij.
Conf. Rosæ can. q. s. s. Ft. Pilulæ 8 æquales.
Sumat j. quater indies.

Miss C. now left Bath with the following instructions:—1st. Wholly to abstain from spirits and fermented liquors; to eat meat only once a-day, and always to eat less than her appetite demanded.

2dly. To walk every day as far as her strength would permit, avoiding the heat of the day.

3dly. To have four leeches applied once a week to the temples, encouraging the subsequent discharge of blood by washing the orifices with lukewarm water.

4thly. To employ a cold shower bath every other morning before breakfast.

5thly. To keep her hair constantly close cut.

6thly. To persevere for a month in the use of the pills last prescribed.

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